

HIGHLY CONFIDENTIAL – SUBJECT TO PROTECTIVE ORDER

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF OHIO  
EASTERN DIVISION

IN RE NATIONAL PRESCRIPTION  
OPIATE LITIGATION

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THIS REPORT RELATES TO:

*Track One Cases*

**MDL No. 2804**  
**Case No. 1:17-MD-02804**  
**Judge Dan Aaron Polster**

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**EXPERT REPORT OF**  
**ROBERT L. BRUNNER**

May 10, 2019

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I am a Vice President at Charles River Associates, Inc. (“CRA”), 633 West Fifth Street, Los Angeles, CA 90071. CRA is a global consulting firm that offers economic, financial and strategic expertise to major law firms, corporations, accounting firms, and governments around the world.

**I. INTRODUCTION AND SCOPE OF ASSIGNMENT**

1. CRA was engaged by Bartlit Beck LLP (“Counsel”), in connection with its representation of Walgreen Co. and Walgreen Eastern Co. (“Walgreens”) in the above-captioned cases. I was engaged to provide expert opinions and analysis in this matter as set forth below. I may also offer expert opinions and analysis on behalf of other defendants.

2. Prior to receiving and reviewing the expert witness report of Craig J. McCann, PhD (“McCann”) dated March 25th, 2019 (“McCann Report”) and any documents or data, I read and executed the PROTECTIVE ORDER RE: DEA’S ARCOS/DADS DATABASE and the CASE MANAGEMENT ORDER NO. 2: PROTECTIVE ORDER in this case. The staff whom I directed also read and executed the aforementioned documents in this case.

3. I was asked to review the DEA-produced ARCOS Data from 1/1/2006 through 12/31/2014<sup>1</sup> (“ARCOS Data”) and Walgreens’ production of transactional data for the period 8/1/2002 through 4/9/2014<sup>2</sup> (“Walgreens’ Data”) to determine if the two datasets are reliable based on the information made available to me.

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<sup>1</sup> Automation of Reports and Consolidated Orders System (ARCOS) electronic data, received from the Drug Enforcement Administration (“ARCOS Data”).

<sup>2</sup> On February 5, 2019, Walgreens produced transactional data for fentanyl, hydrocodone, hydromorphone, methadone, morphine, oxycodone, oxymorphone, and tapentadol from August 1, 2002 to April 9, 2014.

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4. I was asked to review the McCann Report (with accompanying data, the “McCann Report”), the first Supplemental Report of McCann dated April 3<sup>rd</sup>, 2019 (with accompanying data, the “First Supplemental Report”), the second Supplemental Report of McCann dated April 15<sup>th</sup>, 2019 (with accompanying data, the “Second Supplemental Report”), the first production of additional underlying support of McCann dated April 24<sup>th</sup>, 2019 (“First Underlying Support”), the second production of additional underlying support dated April 24<sup>th</sup>, 2019 (“Second Underlying Support”), and the third production of additional underlying support dated May 3, 2019 (“Third Underlying Support”).

5. More specifically, I was asked to focus my review on McCann’s methods, calculations, use, results, and presentation of the ARCOS and Walgreens’ Data, where Walgreens was a distributor of certain pharmaceutical opioids to Walgreens pharmacies in Cuyahoga County and Summit County, Ohio for the period 8/1/2002 through 4/9/2014. This included an examination of McCann’s figures, charts, graphs, computer code, and underlying data to assess if the information he presented was done so appropriately and accurately, and if appropriate, develop visual depictions that are more accurate and representative of Walgreens’ underlying transactional data involving Walgreens’ distribution of certain pharmaceutical opioids to Walgreens pharmacies in Cuyahoga County and Summit County, Ohio.

6. My analyses, conclusions, and opinions are based solely on the work performed by me and those under my supervision, through the date of this expert report. I reserve the right to supplement the analyses and/or opinions should additional relevant information become available that bears on the analyses, conclusions, or opinions contained herein.

7. Due to the short time period available to assess McCann’s report and underlying data, the late Supplemental Reports, and the fact that we did not receive all of his underlying

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computer code and materials until 5/4/2019, I have done my best to complete my analyses of his methods, results, and data. That said, there may be other defects in his work or the presentation of his results of which I am not yet aware. In addition, my report is being submitted without the benefit of, McCann's deposition testimony which is scheduled to occur one day before and on the same day that my report is due. I will supplement my report as necessary, based on my continued review of McCann's produced materials, McCann's deposition testimony, and to the extent McCann continues to produce additional information that affects my opinions.

**II. PROFESSIONAL QUALIFICATIONS**

8. I am a Vice President at CRA and have over 30 years of experience working with complex datasets and transactional databases in class action and other complex lawsuits, government and regulatory investigations, financial and accounting investigations, bankruptcies and other cases requiring complex modeling and the sharing of information. I have significant expertise in the areas of database design and management, complex data modeling and analysis, claims management and administration, and electronic discovery.

9. Prior to joining CRA, I was the founder and global leader of the Data & Analytics practice at FTI Consulting for more than 15 years. Before joining FTI Consulting, I was the partner-in-charge of the Class Action/Complex Data Services practice for KPMG. Before joining KPMG in 2003, I was a partner in Arthur Andersen LLP, where I led the firm's Class Action Services and Complex Data Management & Analysis practices, and the Economic and Financial Consulting practice in the Pacific Northwest region. Prior to joining Arthur Andersen in 1987, I was the Director of Administrative Computing for Scripps Institution of Oceanography from 1985 to 1987.



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10. Over the past 30 years, I have performed expert data analysis services and / or investigations on behalf of various federal agencies (including the US Dept of Justice, the US Dept of Treasury and the US Dept of Interior), local governments (including Counties, Cities, Transit Districts, etc.), major financial institutions, credit card companies, online retailers, telecommunications companies, corporate boards of directors, receivers, trustees, monitors, and other parties.

11. This data analysis has typically involved the identifications, extraction, validation, assimilation and analysis of large, complex, and often disparate, databases and/or datasets ranging in size from several thousand transactions to tens of billions of transactions.

12. I hold B.A. degrees from the University of California at San Diego in mathematics and economics.

13. I have instructed several mathematics and computer science courses for the University of California at both the undergraduate and graduate level.

14. I have not been deposed as an expert witness in the last four years. I have not authored publications in the last ten years.

15. My curriculum vitae can be found in Appendix A.

16. CRA is compensated at the rate of \$725 per hour for my services in this matter. No portion of my compensation nor my team's compensation is dependent upon the outcome of this case, and no portion of CRA's fees are dependent upon the outcome of this case.

### **III. INFORMATION CONSIDERED**

17. I have examined certain information of the type and nature customarily relied upon by data analysts/scientists in calculating and analyzing the information presented in this

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report. I have also had a conversation with John Merritello, Manager - Walgreen Co. A detailed list of the materials I reviewed is contained in Appendix B.

**IV. SUMMARY OF OPINIONS**

**A. Opinion No. 1 – Walgreens’ Data.**

18. It is my opinion, to a reasonable degree of certainty, that Walgreens’ transactional data produced at WAGMDL00773926 is a reliable source of information as it pertains to Walgreens’ distribution of eight pharmaceutical opioids to Walgreens pharmacies located in Cuyahoga County and Summit County, Ohio for the period August 1, 2002 to April 9, 2014.

**B. Opinion No. 2 – The ARCOS Data.**

19. Subject to a small number of adjustments described in more detail in Section V of my report, I conclude with a reasonable degree of certainty that the DEA-produced ARCOS Data is a reliable source of information as it pertains to Walgreens’ distribution of certain pharmaceutical opioids to Walgreens pharmacies located in Cuyahoga County and Summit County, Ohio for the periods January 1, 2006 through April 9, 2014.<sup>3</sup>

**C. Opinion No. 3 – McCann’s methodologies for flagging transactions in the ARCOS and Walgreens’ Data do not provide information about any particular transaction beyond an initial triggering transaction.**

20. I have reviewed the McCann Report and the work papers and incomplete computer code made available to me one month after McCann issued his first report. Based on that review, it is my opinion that McCann’s five methodologies are arbitrarily applied across all

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<sup>3</sup> As supplemented by Walgreen’s data for October 2007 (*See* McCann paragraph 96 at 39) and adjusted to reflect six Walgreens pharmacies in Cuyahoga County that shared three Buyer DEA Numbers. The ARCOS Data is through 12/31/2014; however, Walgreens made no shipments of the any of the relevant drugs into Cuyahoga or Summit Counties after April 9, 2014.

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of Walgreens pharmacies, regardless of their demographic profiles, geographic locations and other store-specific factors. Amongst other method-specific infirmities, all of McCann’s methodologies employ a cumulative function that flags all transactions on or after the date of a first, triggering transaction being identified by the methodology in question. McCann does not use his methodologies for anything but identifying the date of the first, triggering transaction, after which all subsequent transactions are flagged. All flagged transactions for Walgreens are presented in the aggregate, rather than at the store level.

**D. Opinion No. 4 – McCann’s presentation of data is misleading, and his aggregation of data prevents analysis at the individual store level.**

21. It is my opinion that McCann’s aggregation of data without regard for individual store characteristics and often stark differences combined with the aforementioned cumulative flagging function yields misleading results. McCann aggregates disparate data sets (from different defendants, including varying sub-sets of drugs, and covering different periods of time), into misleading representations in many summary charts. Because of McCann’s mistreatment of the data, the multitude of related summary statistics that McCann cites within the body of his report misrepresent the changes in volume of transactions that were occurring in the real world.

**E. Opinion No. 5 – McCann’s “Excessive Shipments” analysis is unsupported.**

22. McCann provides no basis for his purported “medically necessary” baseline of per capita opioid MME, which he asserts in Section X of his report (pp 82-88). Nor does he provide a basis or reasoning behind his assumptions concerning the “medically necessary” lower and upper bounds of opioid use. McCann’s assumptions applied to his interpolated “medically necessary” estimates are based on simplistic and naive assumptions that are not based on factual evidence or data.

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**F. Opinion No. 6 – Comparative Analyses of Walgreens’ Distributor Shipments to Walgreens Pharmacies by Drug Strength**

23. At the request of counsel, I was asked to prepare charts summarizing the drug strength of hydrocodone and oxycodone shipped by Walgreens’ distributors to Walgreens pharmacies into Cuyahoga County and Summit County, Ohio, throughout the timeframe for which data is available.

**G. Opinion No. 7 - Additional Tables and Charts Summarizing Walgreens’ Data**

24. I have created a series of additional tables and charts that summarize and illustrate Walgreens’ transactional data where Walgreens was a distributor of hydrocodone and oxycodone to Walgreens pharmacies in Cuyahoga and Summit County, Ohio during the period August 1, 2002 through April 9, 2014.

**After reviewing the McCann Report, First and Second Supplemental Report, and First and Second Production, I offer the following more detailed observations and opinions.**

**V. DETAILS OF OPINIONS WITH SUPPORTING DATA ANALYTICS AND VISUALIZATIONS**

**A. Opinion No. 1 – Walgreens’ Data.**

25. It is my opinion, to a reasonable degree of certainty, that Walgreens’ transactional data produced at WAGMDL00773926 is a reliable source of information as it pertains to Walgreens’ distribution of eight pharmaceutical opioids to Walgreens pharmacies located in Cuyahoga County and Summit County, Ohio for the period August 1, 2002 to April 9, 2014. Walgreens’ Data shows that Walgreens made no shipments of the relevant eight drugs into Cuyahoga or Summit Counties after April 9, 2014.

26. I spoke with the team that was involved in preparing Walgreens’ production of transactional data for discovery, including Sean Barnes and Manvendra Singh, and I understand

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how it was prepared. I also understand it was the same data that Walgreens submitted to ARCOS on a monthly basis, but for the limitation on the production of the eight drug types. In addition, Walgreens' transactional data aligns perfectly with the ARCOS Data from 2006-2014, where that ARCOS Data exists.

27. For the time periods that overlap, January 1, 2006 through August 9, 2014, for Cuyahoga County and Summit County in Ohio, and for the drugs fentanyl, dihydrocodeine, hydromorphone, methadone, morphine, oxycodone, oxymorphone, and tapentadol, I have been able to verify that all quantities and transactions in the ARCOS Data exist in the Walgreens Data.

28. For each NDC code, I reviewed the total quantity and number of transactions in the Walgreens' transactional data to the 59 Walgreens Buyers in Summit and Cuyahoga counties for overlapping time periods (January 1, 2006 - August 9, 2014). I also reviewed the NDC codes, Buyer DEA Numbers, and Reporter DEA Numbers, and found that there were no discrepancies in the distinct lists of each metric between the two data sources. The overlap of transactions by NDC code, and the matching list of Buyer DEA Numbers and Reporter DEA Numbers, lead me to believe the Walgreens' transaction data production is accurate and reliable, and aligns closely to the ARCOS Data production subset, but for the two issues with ARCOS described in my next opinion (*i.e.*, October 2007 variance, and overlapping Buyer DEA Number).

**B. Opinion No. 2 – The ARCOS Data.**

29. Subject to a small number of distinct adjustments described in more detail below, I conclude with a reasonable degree of certainty that the DEA-produced ARCOS Data is a reliable source of information as it pertains to Walgreens' distribution of certain pharmaceutical

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opioids to Walgreens pharmacies located in Cuyahoga County and Summit County, Ohio for the periods January 1, 2006 through April 9, 2014.<sup>4</sup>

30. The DEA produced a subset of ARCOS transactional data for fourteen drugs types: buprenorphine, codeine, dihydrocodeine, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, powdered opium, oxycodone, oxymorphone, and tapentadol from January 1, 2006 through April 9, 2014.

31. For the same time period, for Cuyahoga County and Summit County, Ohio and for the limited drugs fentanyl, hydrocodone, hydromorphone, methadone, morphine, oxycodone, oxymorphone, and tapentadol, the ARCOS Data appears to be an accurate representation of Walgreens distributions to Walgreens pharmacies, after accounting for the two limitations described below.

32. As McCann indicates<sup>5</sup> there is a small variance in October 2007, and a small number of transactions (193) with small errors concerning transactions assigned to Buyer DEA Numbers. Additionally, some Buyer DEA Numbers are associated with multiple store numbers and addresses and therefore are subject to some adjustment using Walgreens' production of transactional data.

33. It appears the DEA used a static lookup table<sup>6</sup> to provide store address and store number information for each Buyer DEA Number. Certain Walgreens stores closed and a new

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<sup>4</sup> The ARCOS Data is missing some transactions that appear in the Walgreens distribution data for the period October 2007. The ARCOS Data is also missing some store numbers and addresses for certain Walgreens pharmacies that shared Buyer DEA Numbers with other stores.

<sup>5</sup> McCann Report at paragraph 96 at 39.

<sup>6</sup> Alternative explanations as to how the DEA pulled the production of ARCOS Data may exist, such as failing to include transaction date references when pulling store address information, but

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store opened in a different location, but the new store retained the same Buyer DEA Number as the closed store. The ARCOS dataset contains only the most recent address and store number information for the specified Buyer DEA Number<sup>7</sup>, thus the data incorrectly represents the transactions of the closed store as though they were conducted at the new location. This again limits the ability of complete and accurate analyses at the store level.

34. I have not reviewed this issue for other defendants, but it is possible that this scenario occurred other times throughout the relevant time period, for other distributors, and would lead to additional flawed analyses on a store level.

35. As stated in my first opinion, for the overlapping time period, Walgreens' transactional data reconciles to the ARCOS Data of the total number of transactions and quantity, where that ARCOS Data exists.

**36. Utilization of Walgreens' Data instead of ARCOS Data in charts and tables.**

37. Wherever possible, I relied upon Walgreens' transactional data produced on February 5, 2019 instead of the ARCOS Data as it covers a longer period time, beginning in August 1, 2002 as opposed to January 1, 2006, and ends when Walgreens was no longer a distributor of pharmaceutical opioids to Walgreens pharmacies. In addition, the Walgreens' Data is not subject to the shortfall in ARCOS Data identified by McCann related to October 2007 transactions.

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the result is the same notwithstanding the cause. Each transaction in the DEA-produced ARCOS data is associated with the *current* address of the identified Buyer DEA Number, not the address of that Buyer DEA Number *on the date of the transaction*.

<sup>7</sup> McCann Report paragraph 36 at 12 also describes the Buyer Name and Address and that some Buyer DEA Numbers are associated with multiple addresses.

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38. Lastly, the Walgreens' Data contains a distinct column with complete and historically accurate Walgreens store numbers, which provide the means to distinguish between transactions from closed and relocated stores, when those relocated stores maintained the same Buyer DEA Number<sup>8</sup>. While the ARCOS Data has some store number information within the address fields, it is static and incomplete.

**C. Opinion No. 3 – McCann's methodologies for flagging transactions in the ARCOS and Walgreens' Data do not provide information about any particular transaction beyond an initial triggering transaction.**

**39. Summary of McCann's Five Methodologies for Flagging Transactions**

40. McCann employed five methodologies for flagging transactions. The purpose, significance and what McCann's methodologies are intended to measure were not provided in his report nor were they linked to any regulatory, scientific, medical, or academic foundation or justification in his report. Four of the five methodologies in the McCann Report share characteristics with, but are different than, the methodologies included in Plaintiffs' Responses to Discovery Ruling 12 Supplemental Interrogatory Issued to Plaintiffs ("Plaintiffs' Interrogatory Responses")<sup>9</sup>. As discussed below, McCann replaced the fifth methodology included in the Plaintiffs' Interrogatory Responses with a different methodology ("Maximum Daily Dosage Units")<sup>10</sup>. McCann provides no explanation for why his new methodology differs from the methodologies in the Plaintiffs' Interrogatory Responses. Of note, the "Exceeding Threshold of

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<sup>8</sup> Three Walgreens stores in the Walgreen's data closed and three different stores opened in new locations with the same Buyer DEA Number as the three closed stores. Each new store was assigned a new and unique Walgreens store number. McCann incorrectly based his analyses solely on the Buyer DEA Number, and thus treated these six distinct Walgreens stores as three stores in his report, which resulted in incorrect and misleading results.

<sup>9</sup> 2019-01-25 Plaintiffs Response to Disc Ruling No 12 as Amended.PDF

<sup>10</sup> McCann Report at paragraph 148-151 at 72-76.



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Initial 6 Months and Assuming No Due Diligence” methodology cited in Plaintiffs’ Interrogatory Responses was not analyzed by McCann.

41. Below is a description of each of McCann’s five methodologies followed by a list of general and specific observations/critiques of each methodology related to Walgreens’ role as a distributor to Walgreens pharmacies in Cuyahoga County and Summit County, Ohio. Beneath each methodology is an oscillating set of two store-specific charts that highlight the first transaction McCann identified under each of his five methodologies, and then highlight all subsequent transactions flagged regardless of their individual attributes, per instruction to McCann from Plaintiffs’ Counsel, measured in dosage units. These charts serve to illustrate McCann’s cumulative flagging function which is addressed after an explanation of McCann’s five transaction flagging methodologies.

- a) **Maximum Monthly, Trailing Six-Month Maximum Threshold** – (aka “Previous 6 Months Threshold is Triggered and Assuming No Due Diligence”<sup>11</sup>)
  - The number of dosage units shipped by a Distributor to a Pharmacy in a calendar month to exceed the highest number of dosage units shipped by the Distributor to the Pharmacy in any one of the six preceding calendar months.
- a) McCann’s methodology ignores growing economy, ignores increased demand, and ignores changing demographics.
- b) Twelve stores in Cuyahoga and eight stores in Summit County fail in the **earliest** month possible under this methodology<sup>12</sup>.

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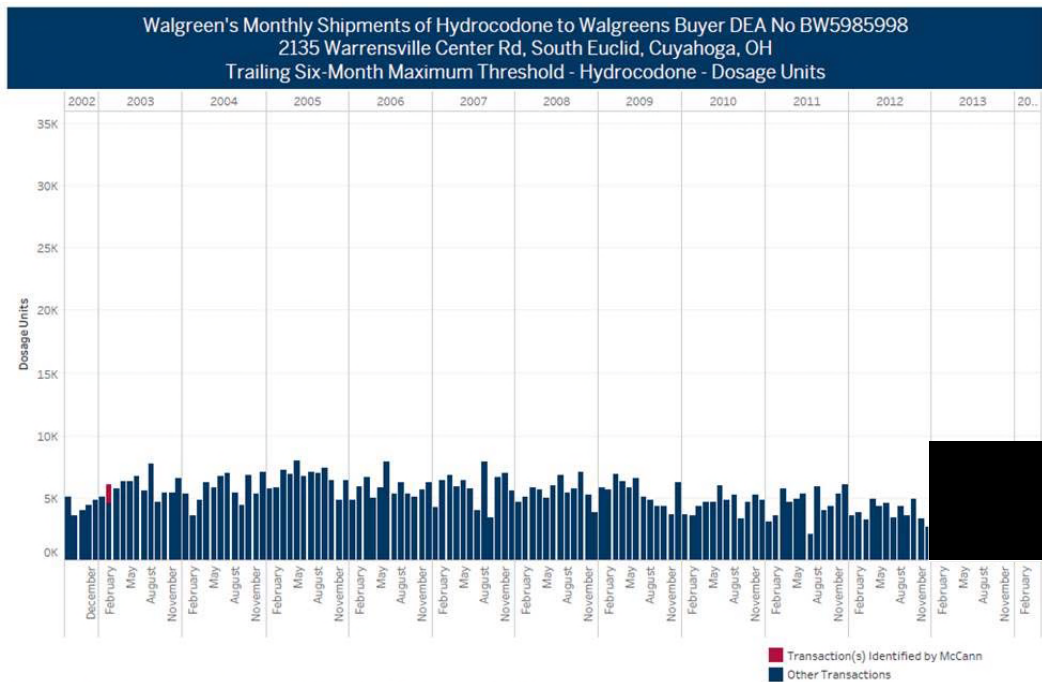
<sup>11</sup> Plaintiffs’ Interrogatory Responses at 6

<sup>12</sup> See First Fail – All McCann Methods.xlsx

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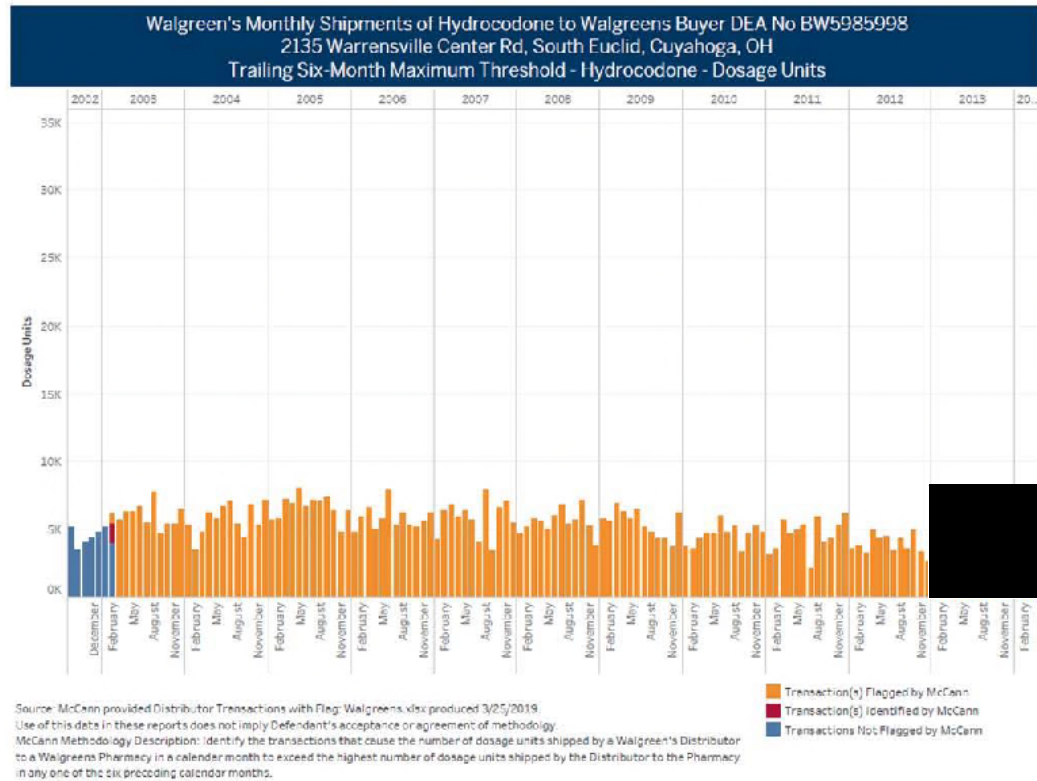
- c) For example, the charts below demonstrate how Buyer DEA Number BW59855998 is flagged in the 7<sup>th</sup> month of transactions (the earliest month possible). In Figure 2 below McCann flags all transactions after that first transaction. See Figure 1 and Figure 2.

**Figure 1 - Maximum Monthly, Trailing Six-Month Maximum Threshold (1st)**



Source: McCann provided Distributor Transactions with Flag: Walgreens.xlsx produced 3/25/2019.  
Use of this data in these reports does not imply Defendant's acceptance or agreement of methodology.  
McCann Methodology Description: Identify the transactions that cause the number of dosage units shipped by a Walgreen's Distributor to a Walgreens Pharmacy in a calendar month to exceed the highest number of dosage units shipped by the Distributor to the Pharmacy in any one of the six preceding calendar months.

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**Figure 2 - Maximum Monthly, Trailing Six-Month Maximum Threshold**

The information in Figure 1 above is reproduced for all Walgreens stores in Appendix C.

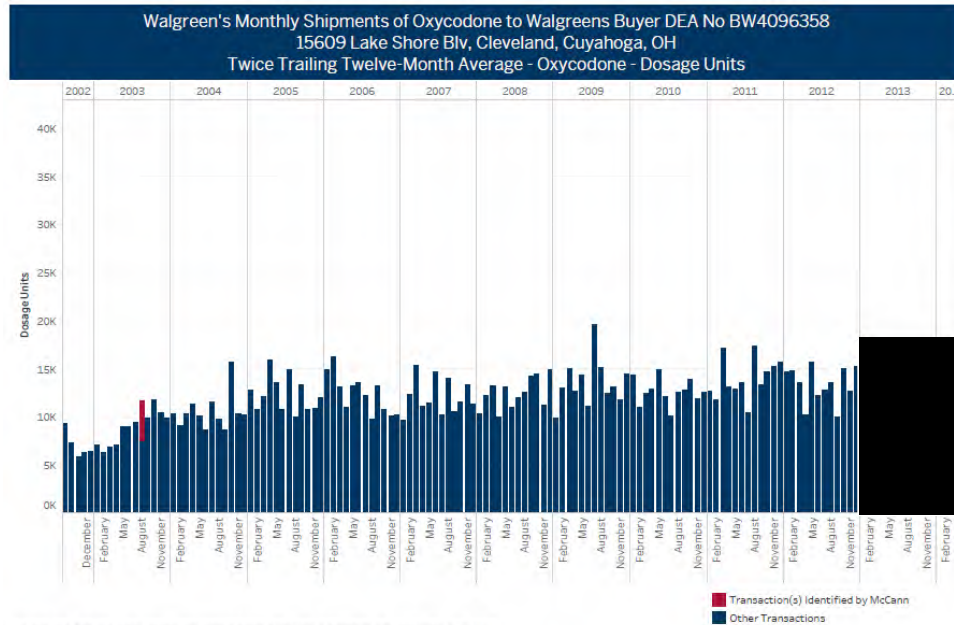
b) **Twice Trailing Twelve-Month Average** – (similar to the “Two Times Rule”<sup>13</sup>) –

Identify the transactions that cause the number of dosage units shipped by a Distributor to a Pharmacy in a calendar month to exceed twice the trailing twelve-month average dosage units to retail and chain pharmacies served by the Distributor.

<sup>13</sup> The “Two Times Rule” as defined in the Plaintiffs’ Interrogatory Responses calculates a nationwide average on a monthly basis by the Defendant, whereas McCann’s Twice Trailing Twelve-Month Average is limited to Cuyahoga and Summit counties by the Distributor and calculates on a trailing 12-month basis (**not** monthly).

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- a) No accounting / consideration is given to the unique circumstances of individual stores.
- b) The chart below demonstrates how Buyer DEA Number BW4096358 is flagged in the 13<sup>th</sup> month of transactions (the earliest month possible). In Figure 4 below McCann flags all transactions after that first transaction. See Figure 3 and Figure 4.

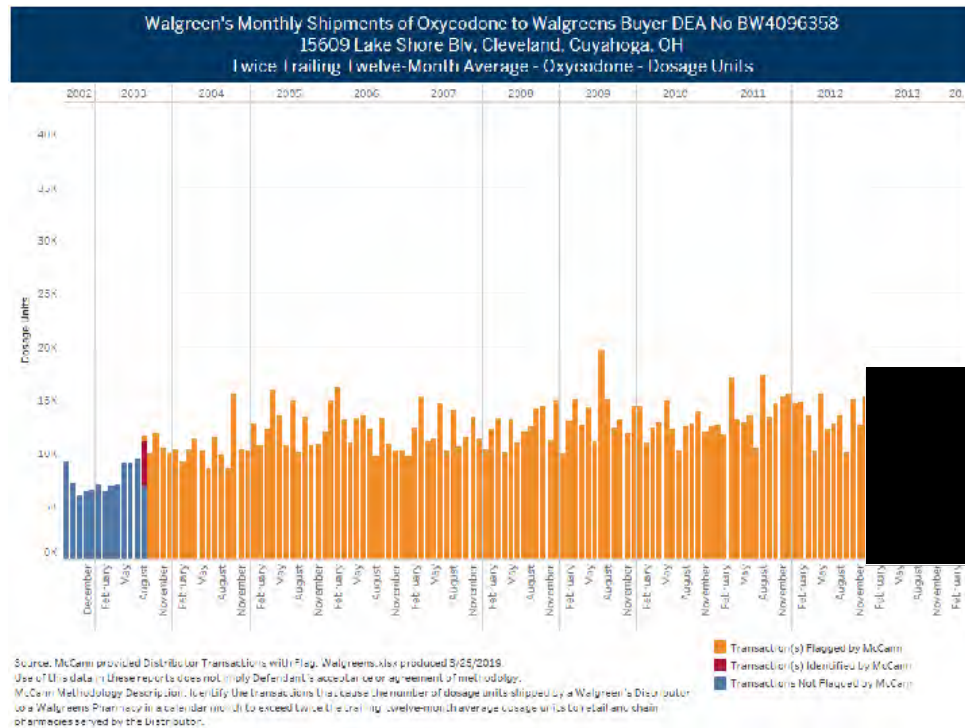
**Figure 3 - Twice Trailing Twelve-Month Average (1st)**

Source: McCann provided Distributor Transactions with Flag: Walgreens.xlsx produced 3/25/2019.

Use of this data in these reports does not imply Defendant's acceptance or agreement of methodology.

McCann Methodology Description: Identify the transactions that cause the number of dosage units shipped by a Walgreen's Distributor to a Walgreens Pharmacy in a calendar month to exceed twice the trailing twelve-month average dosage units to retail and chain pharmacies served by the Distributor.

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**Figure 4 - Twice Trailing Twelve-Month Average**

- c) **Three Times Trailing Twelve-Month Average** – (similar to the “Three Times Rule”<sup>14</sup>) – Identify the transactions that cause the number of dosage units shipped by a Distributor to a Pharmacy in a calendar month to exceed three times the trailing twelve-month average dosage units to retail and chain pharmacies served by the Distributor.

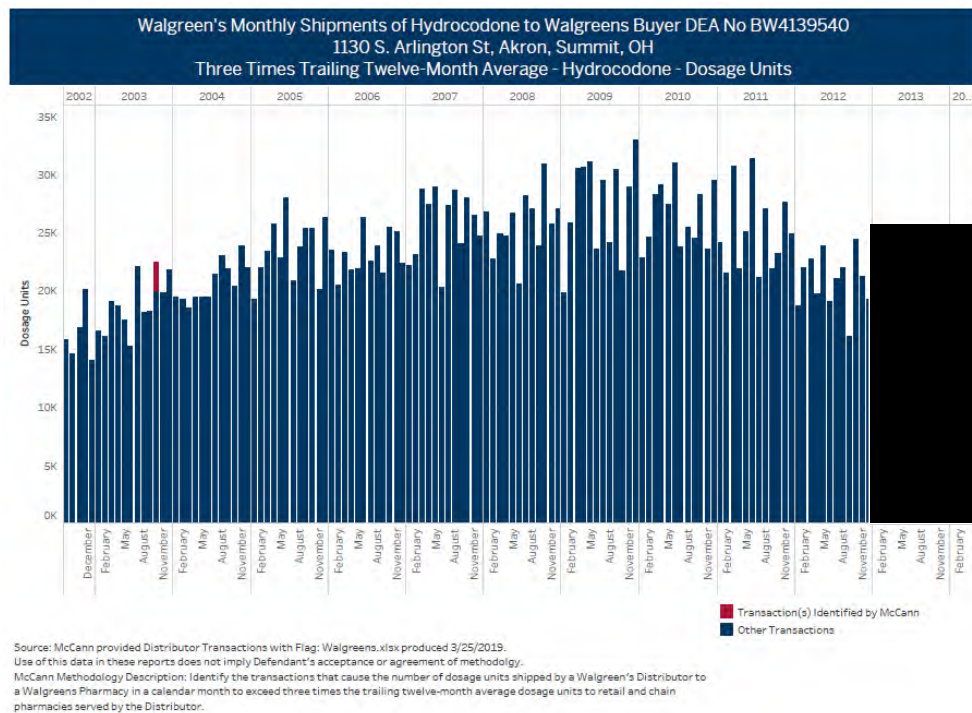
- a) No accounting / consideration is given to the unique circumstances of individual stores

<sup>14</sup> The “Three Times Rule” as defined in the Plaintiffs’ Interrogatory Responses calculates a nationwide average on a monthly basis by the Defendant, whereas McCann’s Three Trailing Twelve-Month Average is limited to Cuyahoga and Summit counties by the Distributor and calculates the average on a trailing 12-month basis (**not** monthly).

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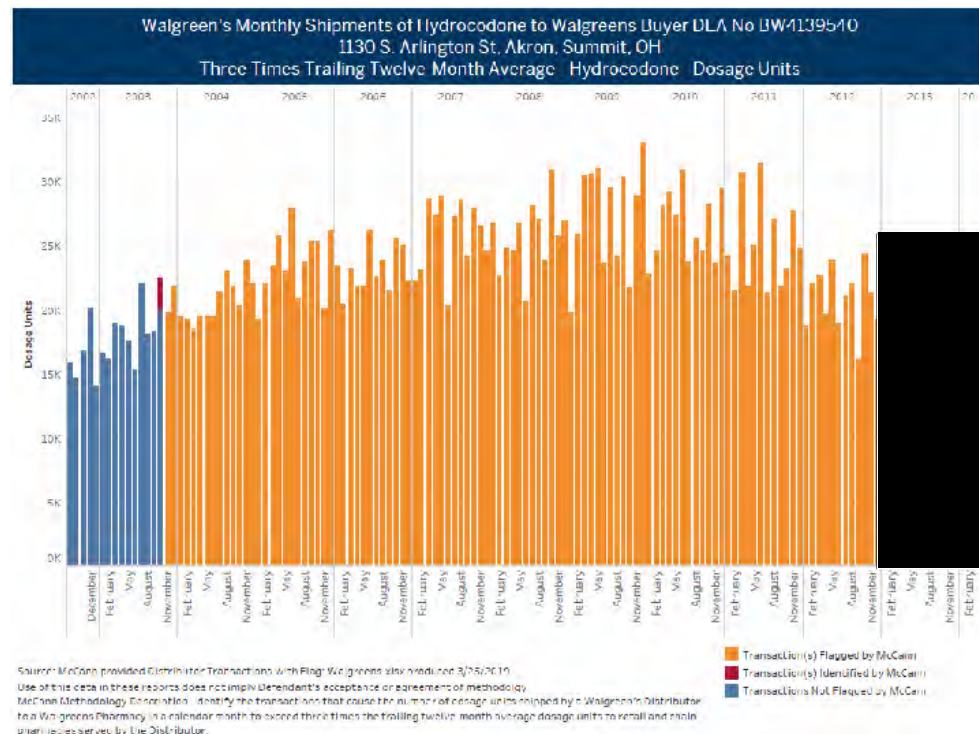
- b) The chart below demonstrates how Buyer DEA Number BW4139540 is flagged in the 15<sup>th</sup> month of transactions. In Figure 6 below McCann flags all transactions after that first transaction. See Figure 5 and Figure 6.

**Figure 5 - Three Times Trailing Twelve-Month Average (1st)**





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**Figure 6 – Three Times Trailing Twelve-Month Average**

- d) **Maximum 8,000 Dosage Units Monthly** – (similar to the “McKesson 8000 Rule”<sup>15</sup>) – Identify the transactions that cause the number of dosage units shipped by a Distributor to a Pharmacy in a calendar month to exceed 8,000 dosage units.
- a) While McCann does not cite any specific documents in his report, according to Plaintiffs’ Interrogatory Responses, this methodology was “designed and operated” by McKesson -- not Walgreens. The program on which this methodology is presumably based, McKesson’s Lifestyle Drug Monitoring Program,<sup>16</sup> applied to oxycodone, hydrocodone, alprazolam (non-opioid), and phentermine (non-opioid) and was operational as of

<sup>15</sup> As defined in the Plaintiffs’ Interrogatory Responses

<sup>16</sup> See MCKMDL00330931 and MCKMDL00330924

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May 1, 2007, whereas McCann applied it before and long after May 1, 2007. McCann offers no explanation for why this methodology should apply retroactively, to defendants other than McKesson, or to every subsequent transaction after the first identified transactions.

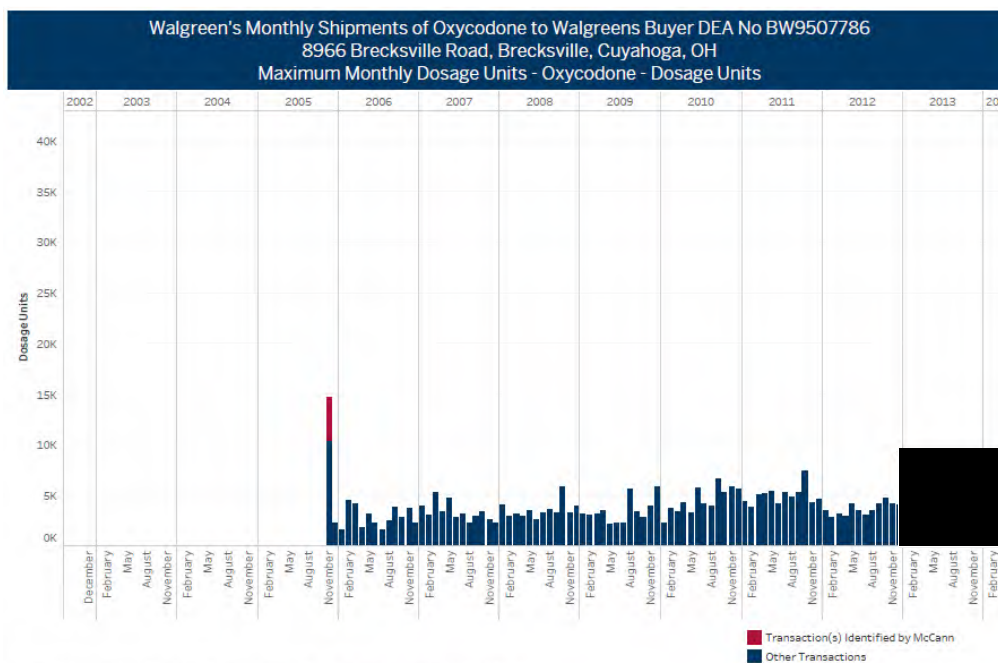
- b) Whether or not this method was appropriate for McKesson's customer base, or some parts of that customer base, it sets an arbitrary limit for all drugs and all shipments to Walgreens stores.
- c) As a measure of how inappropriate the broad application of this arbitrary methodology is, more than two-thirds of Walgreens stores *average* more than 8,000 dosage units for either oxycodone or hydrocodone, while a low-volume Walgreens store hit 8,000 units only when stocking up for a store opening.
- d) No accounting / consideration is given to the unique circumstances of individual stores.
  - 1. For example, stores with an average of only 4,000 dosage units per month could increase orders by *nearly* 100% to **7,999** dosage units per month and not flag. In the Walgreens data, there are nine stores that average less than 4,000 dosage units of hydrocodone or oxycodone per month. At the same time, a store with an average of **8,001** dosage units per month would *always* be flagged under McCann's methodology. Likewise, a store with an average of **7,800** dosage units per month could have a very small increase and flag consistently.



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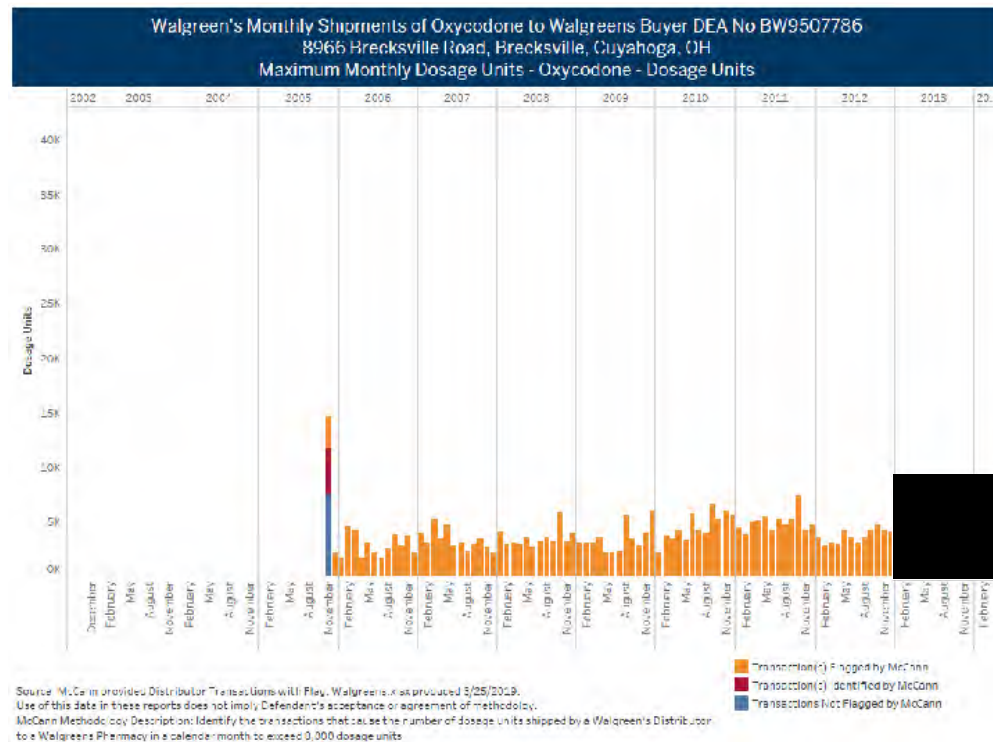
- e) Methodology is ill-suited to high-volume stores, and ill-suited to new stores stocking up.
- e) For example, Figure 7 below demonstrates how BW9507786 is flagged in the 1<sup>st</sup> month (earliest date possible) as it stocks up its inventory, and never hits 8,000 again. Figure 8 demonstrates how McCann flagged transactions in that store.

**Figure 7 - Maximum Monthly Daily Dosage Units (1st)**



Source: McCann provided Distributor Transactions with Flag: Walgreens.xlsx produced 3/25/2019.  
Use of this data in these reports does not imply Defendant's acceptance or agreement of methodology.  
McCann Methodology Description: Identify the transactions that cause the number of dosage units shipped by a Walgreen's Distributor to a Walgreens Pharmacy in a calendar month to exceed 8,000 dosage units.

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**Figure 8 – Maximum Monthly Dosage Units**

- f) **Maximum Daily Dosage Units** – Identify the transaction that cause the number of dosage units shipped by a Distributor to a Pharmacy in a day to exceed a number of dosage units that varies by drug type and within some drug types by formulation.
- a) This methodology is based on a DEA Compliance Manual, Exhibit P<sup>17</sup> related to the Controlled Substances Act (“CSA”) produced by Cardinal Health. Exhibit P lists a variety of drug products with daily dosage limits for both hospitals and retail. This methodology was not cited in Plaintiffs’

<sup>17</sup> Maximum daily dosage units as specified in DEA Compliance Manual, Exhibit P – CAH\_MDL\_PRIORPROD\_DEA07\_01384160-R

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Interrogatory Responses concerning the 20 allegedly “suspicious orders”, and McCann provides no basis for why he selected this methodology.

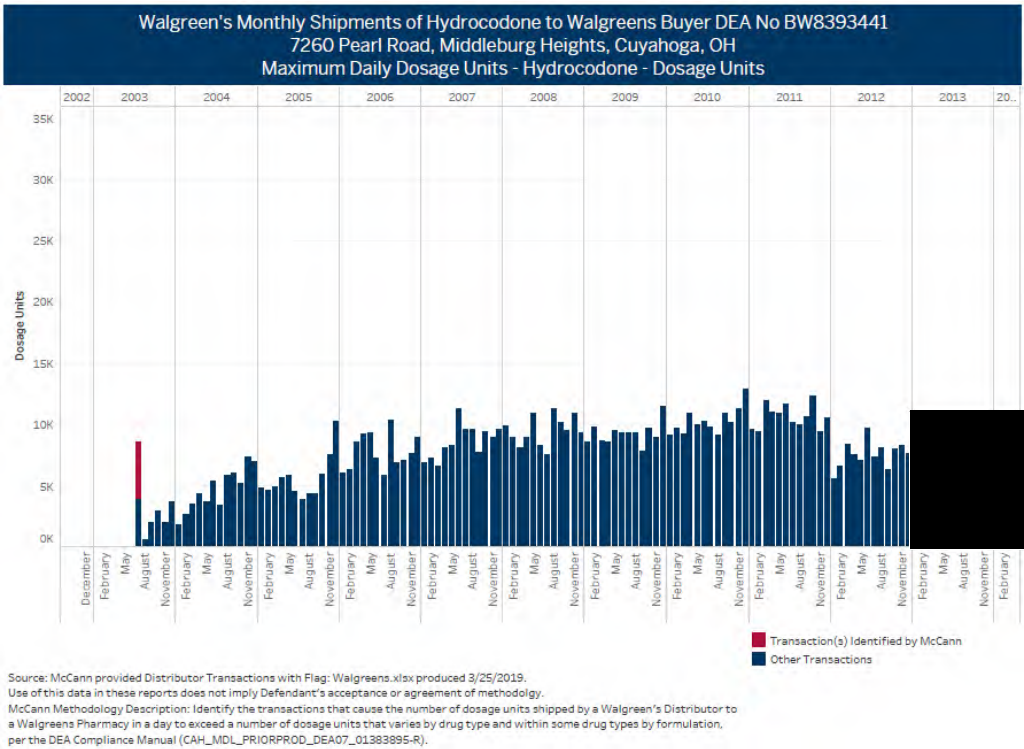
- b) As with the McKesson 8000 methodology above, this methodology is particularly ill-suited to high volume stores, with over 50% being flagged in the very first period measured.
- c) No accounting / consideration is given to the unique circumstances of individual stores.
- d) Certain stores *only* trip this threshold as they are new and stocking up on inventory.
- e) This method is ill-suited to new stores stocking up
  - a) For example, Figure 9 below demonstrates how Buyer DEA Number BW8393441 is flagged on the 1st day of transactions (the earliest date possible) as it is stocking up its inventory<sup>18</sup>. Due to McCann’s cumulative flagging function, every subsequent transaction is also flagged, as shown in Figure 10.

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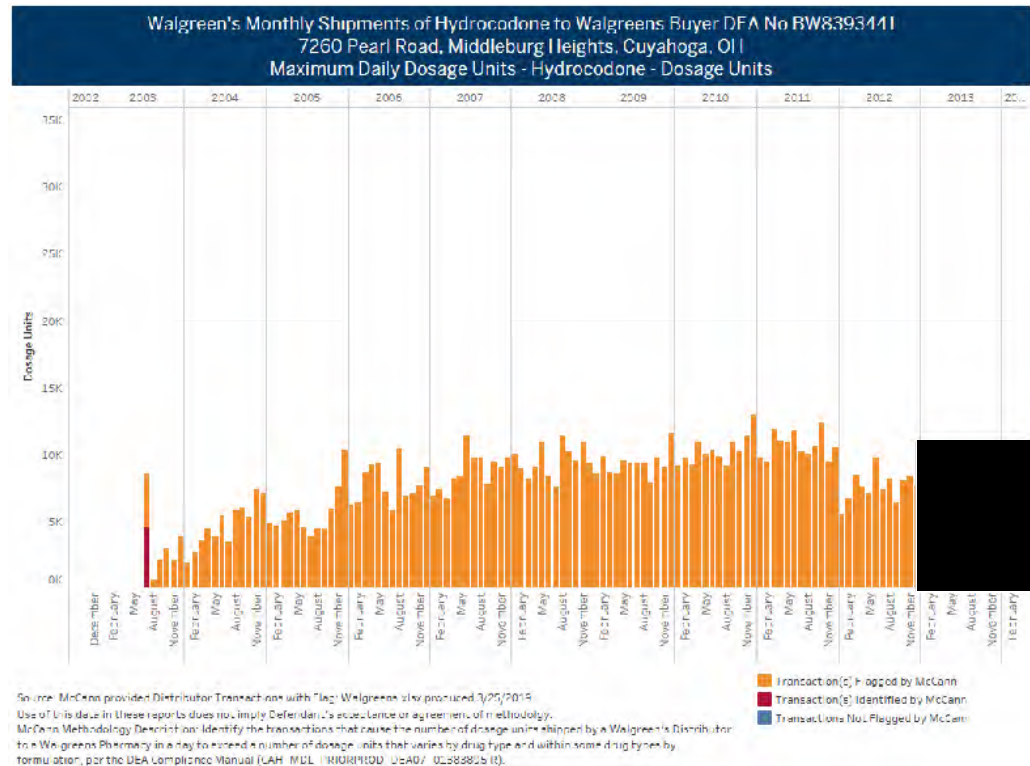
<sup>18</sup> While the chart in Figure 9 stacks red transactions on top of blue, the blue transactions followed the red flagged transactions.

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Figure 9 - Maximum Daily Dosage Units (1st)



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**Figure 10 - Maximum Daily Dosage Units**

42. **Cumulative Flagging Function Applied to ALL of McCann's Five Methodologies.**

43. For each of McCann's five methodologies for flagging transactions, he never uses the methodology to flag more than a single day of transactions, per Walgreens pharmacy, for hydrocodone and oxycodone. All other transactions flagged by McCann were not subject to any algorithm or methodology. At Plaintiffs' Counsel's instruction<sup>19</sup>, McCann simply flags *all transactions* after the first flagged transaction. Beyond the first triggering transaction, and

<sup>19</sup> "I have been asked by Counsel to assume that the Distributor did not effectively investigate the flagged transactions and so every subsequent transaction of that drug code is also flagged because the Distributor had an unfulfilled obligation to detect and investigate the first flagged transaction." – McCann Report, paragraph 136 at 60

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subsequent cumulative flagging, McCann does not present any analysis, charts, or other summaries of his flagging methodologies at the store level.

44. The application of any broad-based flagging transaction methodology, such as the cumulative flagging function employed by McCann in all five of his methodologies, prevents the identification of any issues at the store level. The cumulative flagging function prevents analysis based on the specific characteristics of the individual Walgreens pharmacies, the unique demographic profiles of each pharmacy's customers, the geographic location of the pharmacies (including proximity to hospitals, pain centers, urgent care clinics, acute care centers, distribution centers, etc.), the size of the pharmacies, change in a pharmacy's medication needs over time, and possibly other factors.

45. For example, Walgreens store #12634 located at 1415 Rockside Road Parma, OH 44134 (Buyer DEA Number FW2207125) was shipped its first order for Hydrocodone from a Walgreens distributor on September 9<sup>th</sup>, 2010, exactly *one week before* the store first opened<sup>20</sup>. Under McCann's Maximum Daily Dosage Units methodology, the first hydrocodone shipment to this store is identified by McCann on September 9<sup>th</sup>, 2010 as it exceeds the daily limit under this methodology. Pursuant to Plaintiffs' Counsel's instructions, McCann flags all hydrocodone transactions on this date and all subsequent transactions through April 9, 2014 – nearly 1,200 transactions in total – simply because of a new store opening and stocking its shelves. I have identified 19 other new stores with similar characteristics where the store is first flagged within eight days of the store opening. These 20 stores represent 77% of new stores opened by

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<sup>20</sup> See Walgreens Open and Close Dates.xlsx from John Merittello

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Walgreens during the period 8/1/2002 to 4/9/2014 in Cuyahoga County and Summit County, Ohio.

46. To recap, it is my opinion that all five of McCann’s transaction flagging methodologies employ a cumulative flagging function that is arbitrarily applied across all Walgreens pharmacies in Cuyahoga and Summit County, regardless of their demographic profiles, geographic locations and other store-specific factors. Amongst other method-specific infirmities, these aspects of McCann’s flagging methodologies prevent any analysis of outlier transactions or outlier pharmacies.

47. McCann did generate store-specific charts for certain Walgreens pharmacies located in Cuyahoga County in his first supplemental report<sup>21</sup> dated April 10, 2019 (last modified more than eight months prior on August 8, 2018), as well as store-level charts for both Cuyahoga and Summit Counties in his Appendix 9. However, he did not present any results showing the application of any of his five methodologies for individual Walgreens pharmacies.

48. **Plaintiffs’ identification of 20 allegedly suspicious orders:** As described above, McCann’s methodologies share similarities with the methodologies Plaintiffs employed to identify 20 allegedly “suspicious orders” for each Distributor and National Retail Pharmacy defendant. Presented below are two charts for one of the 20 allegedly suspicious orders. I have positioned each allegedly suspicious order among Walgreens’ corresponding transactional data in order to provide the context of the preceding and subsequent orders.

49. I have also presented two tables (See Figure 11 and Figure 12) and 40 charts (Appendix **D**) highlighting all 20 of the allegedly “suspicious orders” identified in the Plaintiffs’

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<sup>21</sup> See McCann First Supplemental Report, Appendix E (2018.8.21)



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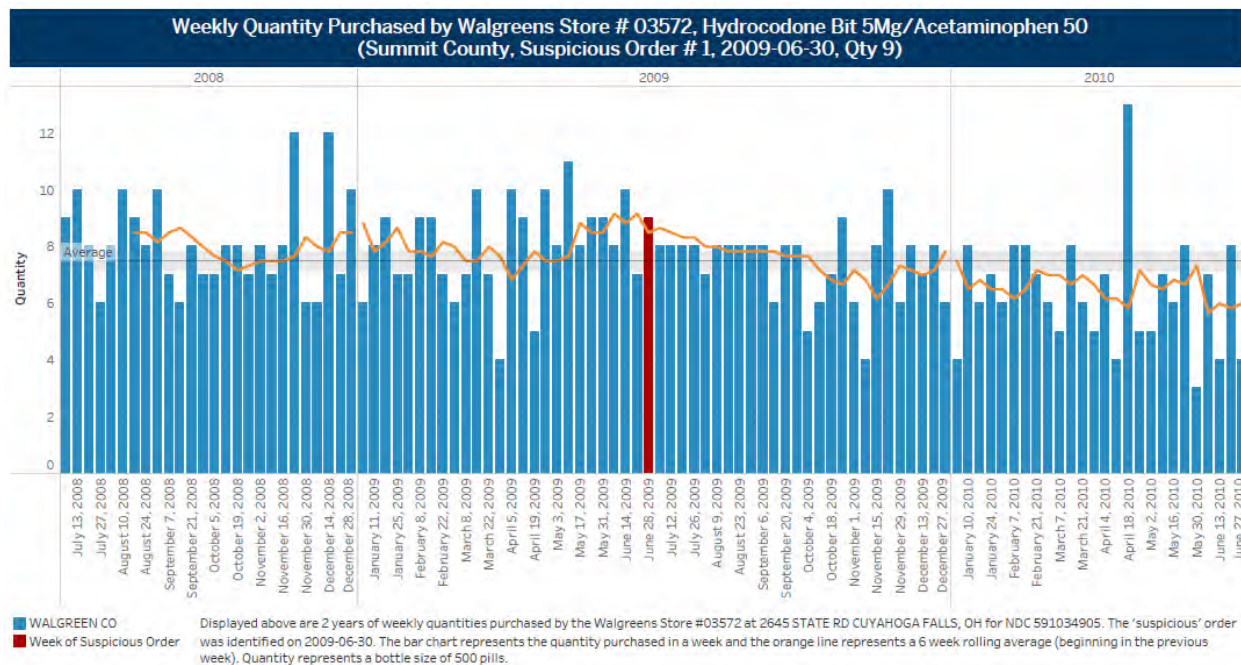
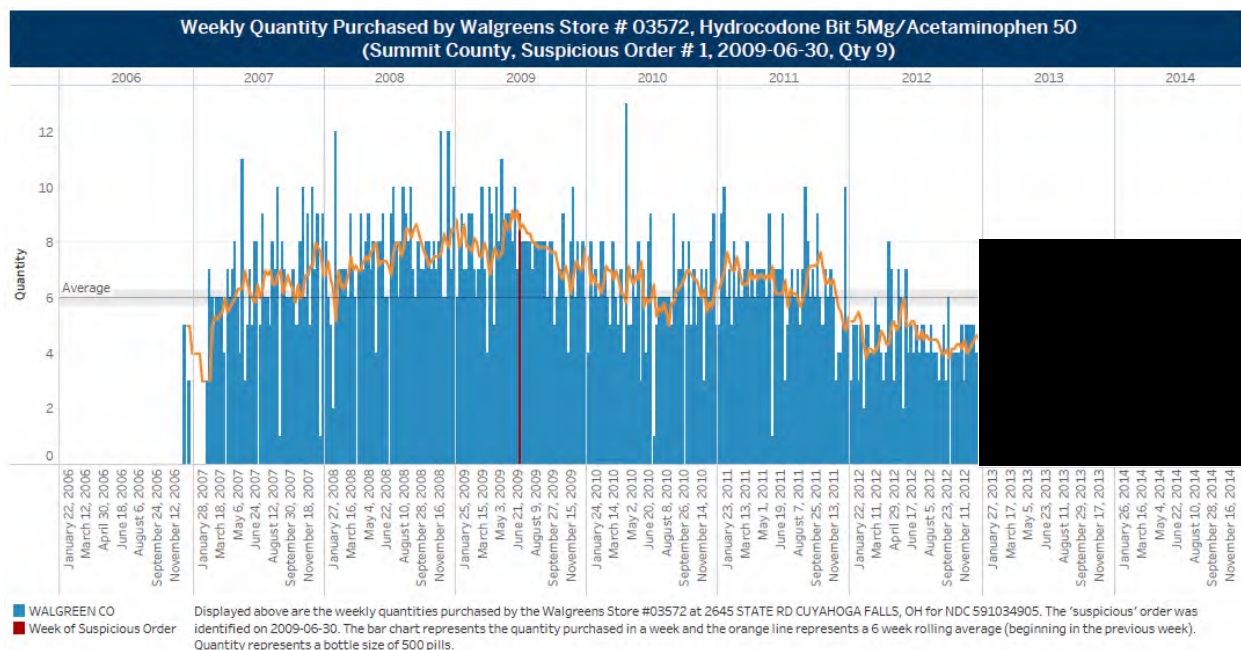
Interrogatory Responses (10 for each county)<sup>22</sup>. Each chart presents the weekly quantities of the drug distributed to the Walgreens pharmacy under one of two different time periods: 1) one year before and one year after the date of the allegedly suspicious order, and 2) the entire period the Walgreens pharmacy received the drug from a Walgreens' distributor. The week containing the suspicious order is highlighted in red. A six-week rolling average of sales of the drug to the pharmacy is represented by an orange line; the rolling average does not start until week six.

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<sup>22</sup> Supplemental DR 12 Interrogatory: For each National Retail Pharmacy Defendant and Distributor Defendant, identify 10 Suspicious Orders for Prescription Opioids that you contend were shipped to Your geographic area during the Relevant Time Period. For each order, identify the date the order was shipped, the manufacturer, name, and amount of the medication that was shipped, the name of the defendant that shipped the order, and the name and location of the person or entity that placed the order. Furthermore, explain in detail all criteria you used to identify these Suspicious Orders, including whether and why you contend (i) any due diligence actually conducted was insufficient, and (ii) the order was so suspicious that there was no amount of due diligence that could have removed every basis to suspect the customer was engaged in diversion.



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**Figure 11 - One allegedly “suspicious order” identified by Plaintiffs’ Counsel (zoomed)****Figure 12 - One allegedly “suspicious order” identified by Plaintiffs’ Counsel**

The information in Figures 11 and 12 above is reproduced for all 20 allegedly “suspicious orders” in Appendix D.

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**D. Opinion No. 4 – McCann’s presentation of data is misleading, and his aggregation of data prevents analysis at the individual store level.**

50. As stated above, McCann’s aggregation of data without regard for individual store characteristics and often stark differences yields misleading results. In addition to aggregating data for all Walgreens pharmacies for purposes of presenting the results of his flagging methodologies, McCann also aggregates disparate data sets (from different defendants, including varying sub-sets of drugs, and covering different periods of time), into misleading representations in many summary charts. Because of McCann’s mistreatment of the data, the multitude of related summary statistics that McCann cites within the body of his report misrepresent the changes in volume of transactions that were occurring in the real world.

**51. McCann aggregates Old Stores and New Stores<sup>23</sup>, suggesting volume increases at individual store where none may exist.**

52. McCann’s charts that aggregate the volume of Walgreens’ transactional data mask any information one might be able to glean from the data if examined on a store-by-store basis. For example, the effect that new store openings can have on the volume of sales when they build up inventory, order new drugs, etc. is masked when store data is aggregated.

- a) Below are example charts showing the aggregated volume of shipments of hydrocodone and oxycodone, in dosage units, from Walgreens’ distributors to Walgreens pharmacies in Cuyahoga County from August 1, 2002 to April 9, 2014, and transactions identified and flagged by McCann under one of his five methodologies (Maximum Monthly, Trailing Six-Month Maximum Threshold).

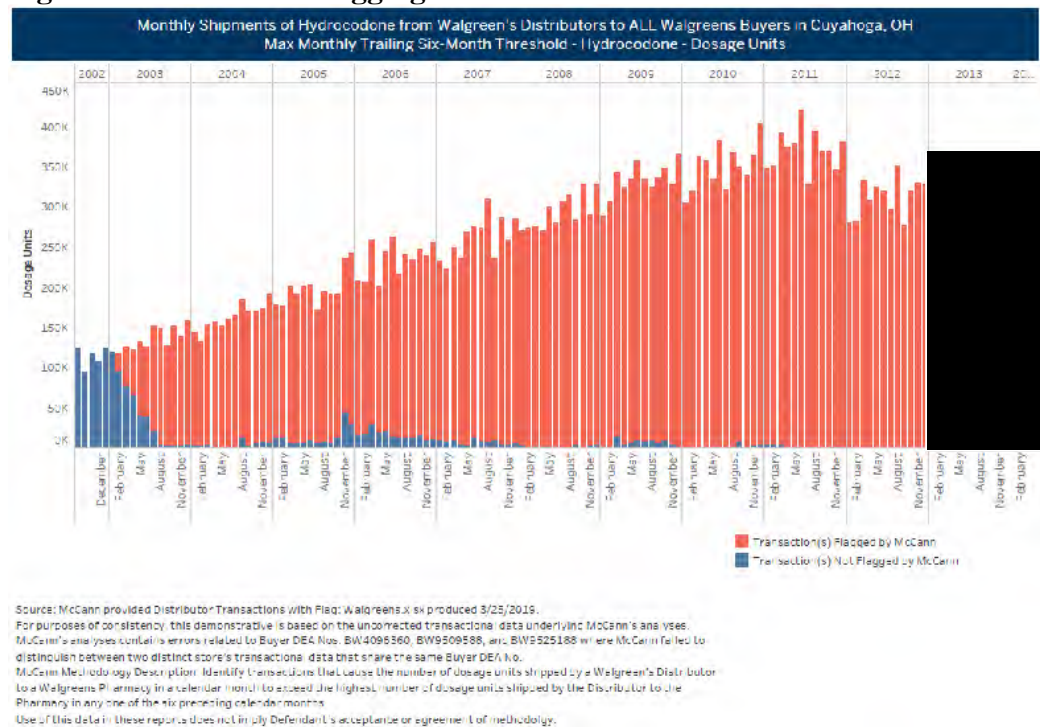
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<sup>23</sup> “Old Stores” have store open dates on or before 8/1/2002 and “New Stores” have store open dates after 8/1/2002. See Table 2 in Section V.G. below.

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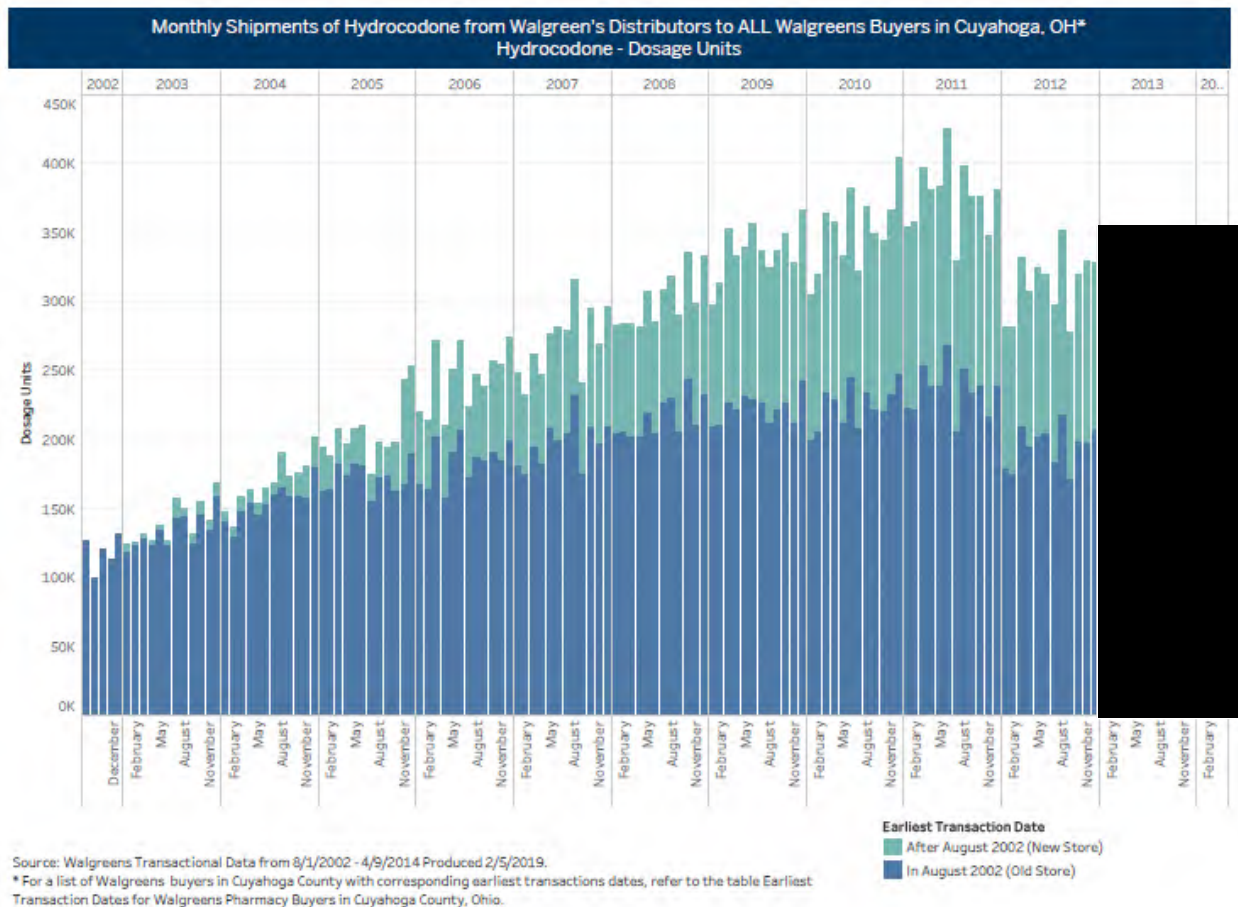
- b) The first chart below (Figure 13) shows transactions flagged by McCann for all Walgreens pharmacies. The unflagged blue blips that appear in later years are *solely* a function of new stores coming online, stocking their inventory, and that have not had enough months of activity to be flagged under McCann’s cumulative flagging methodologies.

**Figure 13 - McCann’s flagging of both Old Stores and New Stores**



53. When disaggregating the Old Stores from the New Stores, it becomes self-evident that a substantial portion of the increase in volume over time results solely from the fact that New Stores opened and began serving patient customers. The next stacked chart illustrates McCann’s aggregation problem in which the bottom section (dark blue) represents the Old Stores and the top section (teal) represents the New Stores that opened after August 2002. See Figure 14 and Appendix E.

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**Figure 14 - Old Stores (dark blue - bottom) and New Stores (teal - top)**

54. By aggregating Old Store and New Store data, McCann's analysis prevents any meaningful review of outlier stores.

55. In addition, McCann's presentation of Walgreens store-specific summaries includes six stores incorrectly combined due to shared Buyer DEA Numbers.

56. McCann failed to distinguish between two distinct stores' transactional data where the stores shared the same Buyer DEA Number. This occurred for six stores in total in the Walgreens data. (I have not analyzed the extent to which this issue occurs in other defendants' data.) When I noticed this nuance in the Walgreens produced transactional data, I spoke with



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John Merritello, a Manager at Rx Inventory Control who has been with Walgreens for 40 years, about what I was seeing in the data. Mr. Merritello confirmed that during this timeframe it was common practice for Walgreens to close stores in strip centers or other locations and to open new stores on corner lots or freestanding locations nearby. Walgreens did this for a variety of reasons, including increased customer convenience (*e.g.*, easier ingress/egress, well-lit parking closer to the store, drive-thru service, etc.). At times, the new store inherited the Buyer DEA Number of the closed store, apparently leading to McCann's misinterpretation of the data.

57. Below is an example of two of the six stores that share Buyer DEA Numbers in Walgreens' transactional data (Stores #3309 and #12444). With respect to the remaining four stores, Appendix F includes eighteen store-specific charts of monthly shipments of oxycodone and hydrocodone from Walgreens' distributors from August 1, 2002 to April 9, 2014, measured in dosage units. These charts represent the six distinct stores that McCann incorrectly grouped into three stores based on shared Buyer DEA Numbers.

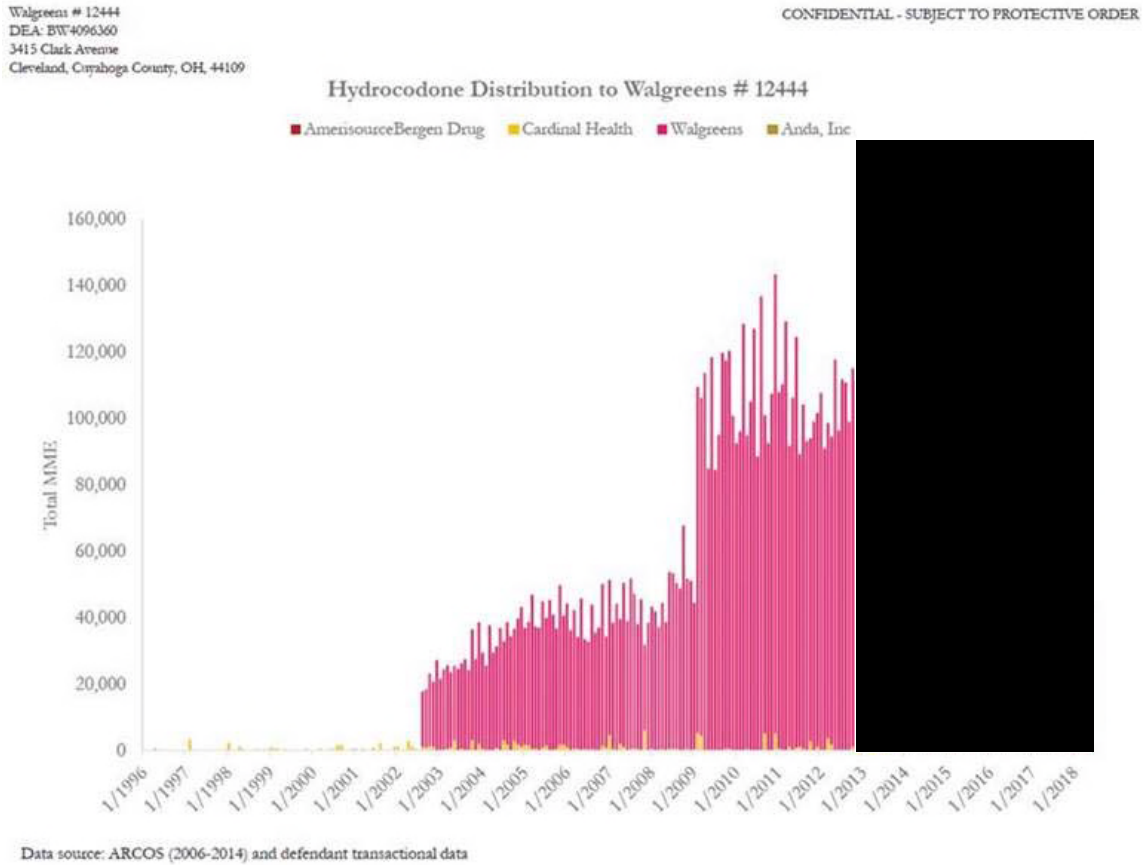
- a) **McCann's Unadjusted** transactional data for each Buyer DEA Number, including non-Walgreens distributors. See Figure 15.
- b) **Old Store** and **New Store** transactional data combined. See Figure 16.
- c) **Old Store** - transactional data<sup>24</sup>. See Figure 17.
- d) **New Store** - transactional data. See Figure 18.
- e) Map view of **Old Store** and **New Store**. See Figure 19.

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<sup>24</sup> McCann presented unadjusted ARCOS Data. Since my analyses of Old Store and New Store are based on the Walgreens' Data, they required no compensating adjustment for this purpose.

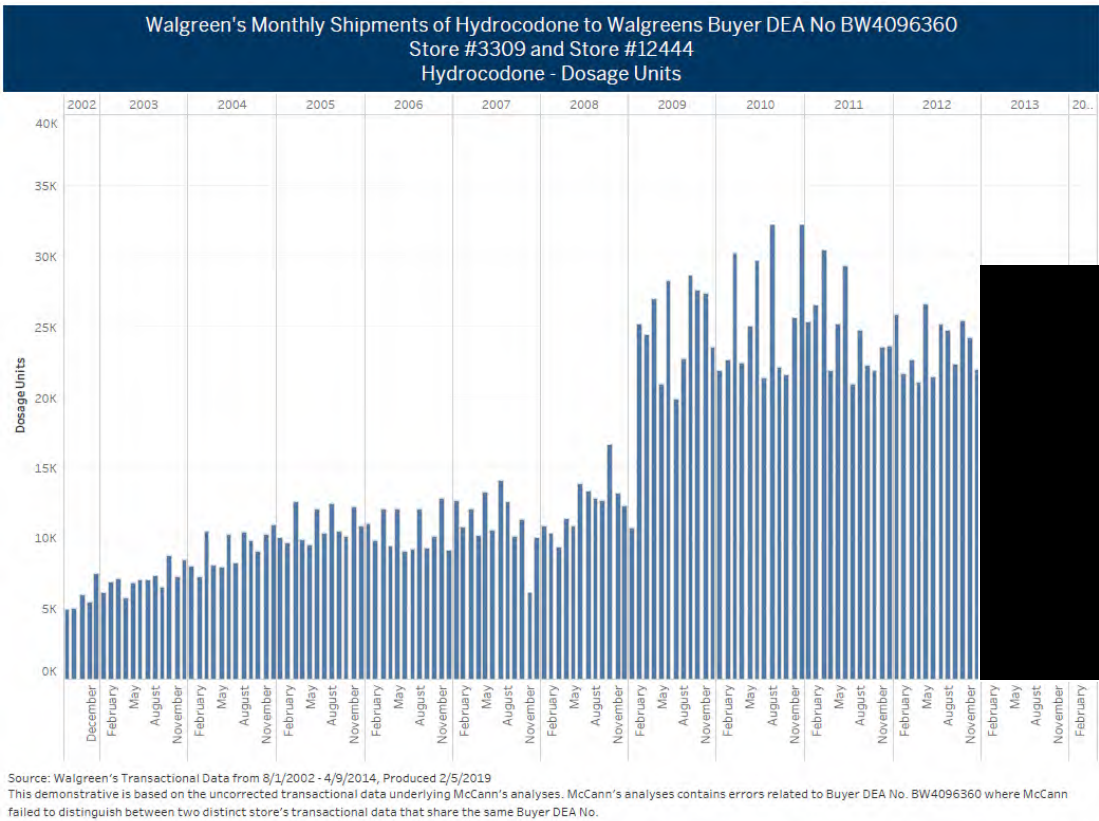
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**Figure 15 - McCann’s mischaracterization of transactions for Store #12444, which includes distribution activity for two distinct stores, and includes shipments from three Non-Walgreens distributors**



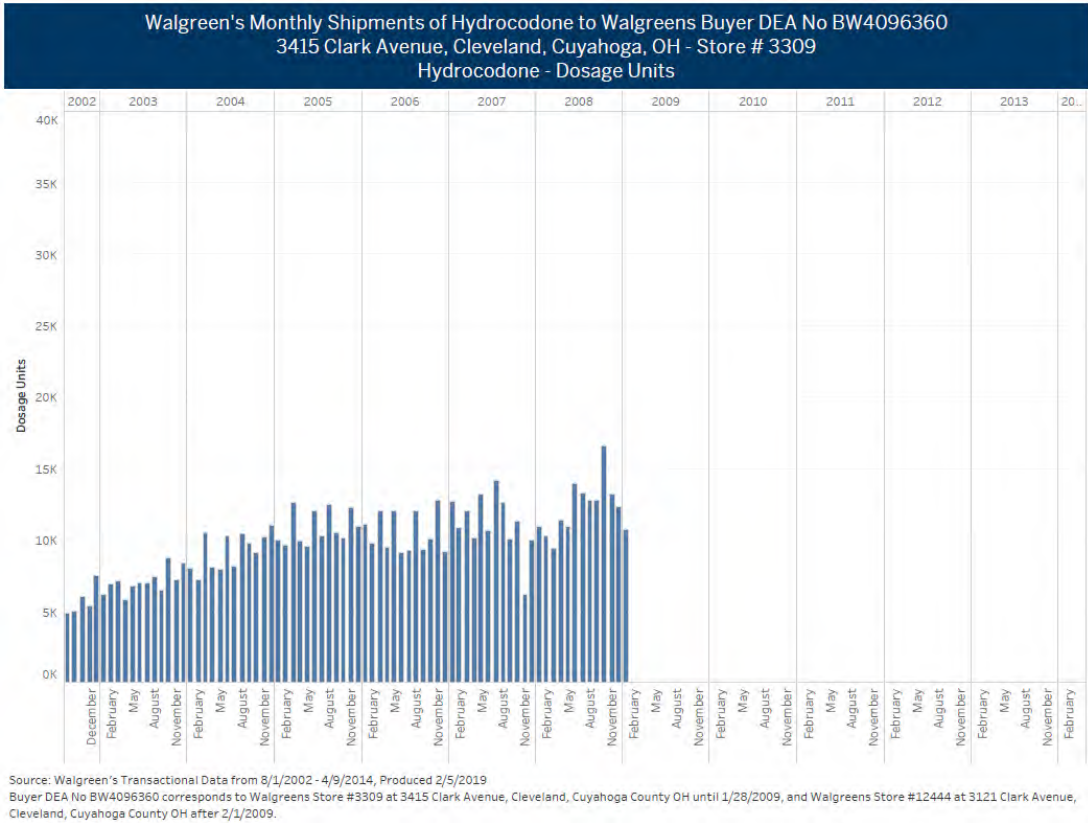
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**Figure 16 - McCann's chart above, excluding Non-Walgreens distributors, but before correcting for his combination of two distinct stores (#3309 and #12444)**



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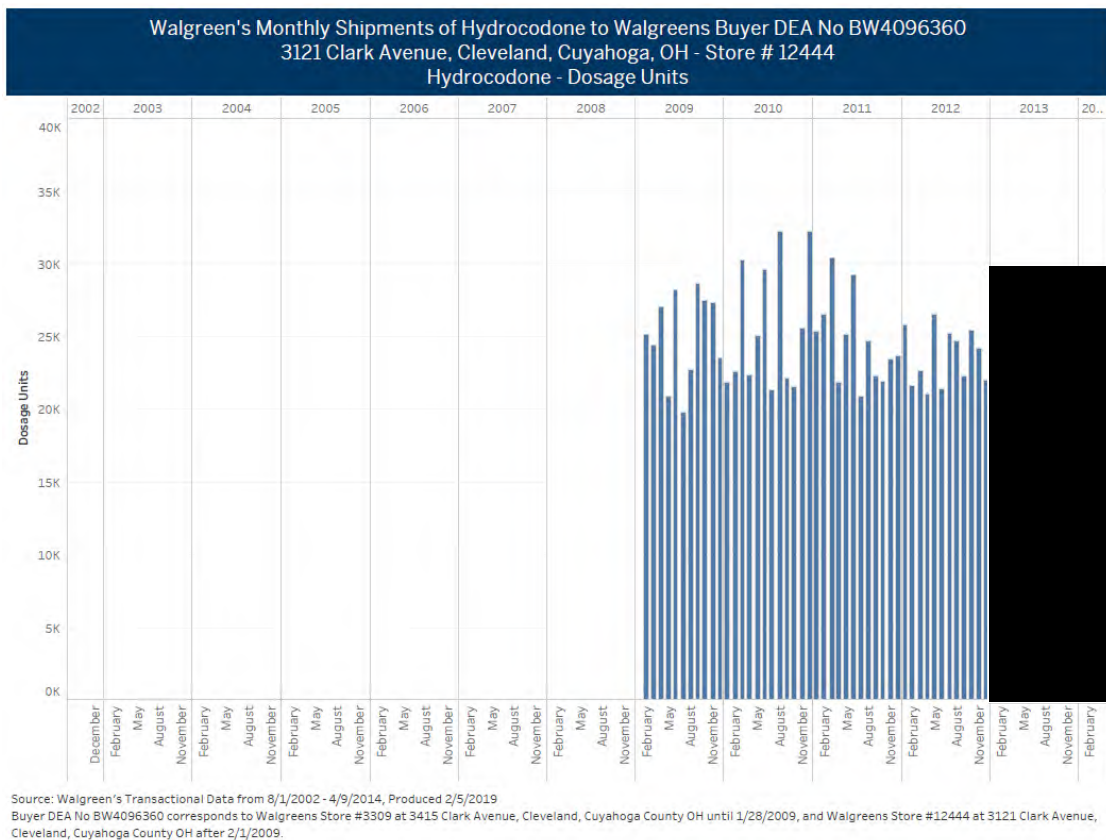
**Figure 17 – Monthly Shipments of Hydrocodone to Old Store at 3415 Clark Ave. (#3309), which closed on January 28, 2009**



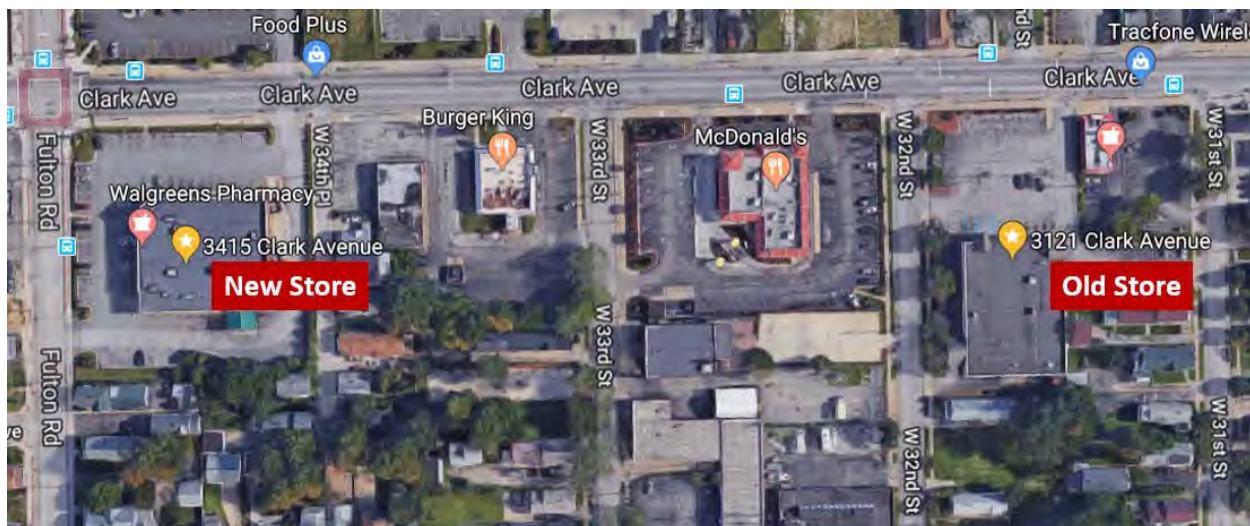


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**Figure 18 - Monthly Shipments of Hydrocodone to New Store at 3121 Clark Ave. (#12444), which opened on February 1, 2009**



**Figure 19 - Map showing the locations of the Old Store and New Store that share the same Buyer DEA Number**



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58. Unlike the Old Store #3309, New Store #12444 is on a corner lot. I understand from Mr. Merritello that relocating to freestanding locations on corner lots was a common business practice for Walgreens in this timeframe, as it increased business both in the front of the store and in the pharmacy.

59. In addition to stores #3309 and #12444, McCann also conflates the data for two other sets of stores:

- Stores #10033 (which closed on 1/31/2007) and #10220 (which opened on 2/1/2007), and
- Stores #10026 (which closed on 12/31/2009) and #10710 (which opened on 1/1/2010).

See Appendix F.

**60. McCann aggregates disparate datasets that cannot reliably be combined.**

61. Another example of McCann's misleading presentation of data are Figures 11-20 (pp. 57-74) and corresponding figures and tables in Section IX. Transaction Analysis that present the number of transactions from Distributors to Retail and Chain pharmacies located in Cuyahoga County and Summit County from 1996 to 2018.

62. The data behind these charts is a mismatched combination of the ARCOS Data from 1/1/2006 to 12/31/2014 and multiple disparate datasets produced by some, but not all, of the Defendants during discovery. McCann appended and prepended the Defendants' transactional data to the ARCOS Data. These charts present aggregated datasets with different begin and end dates and that contain different drug types from different defendants over time. As a result, each year from 1996 to 2018 can contain a variety of different drugs from a variety of different defendants.

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63. McCann's Figures 11-20 show the aggregated results of his flagging methodologies for each county from 1997-2018. The year-over-year trends and annual volumes of transactional data that McCann presents distort the truth. For example, Walgreens produced transactional data for eight of the 14 drug types starting in August 1, 2002 – seven years later than the 1996 starting point on McCann's Figures 11-20. I understand that Walgreens was distributing controlled substances prior to August 1, 2002 but does not retain data earlier than that point in time. Without this critical insight the reader of McCann's Report is left with the false impression that the volume of transactions spiked at certain points in time.

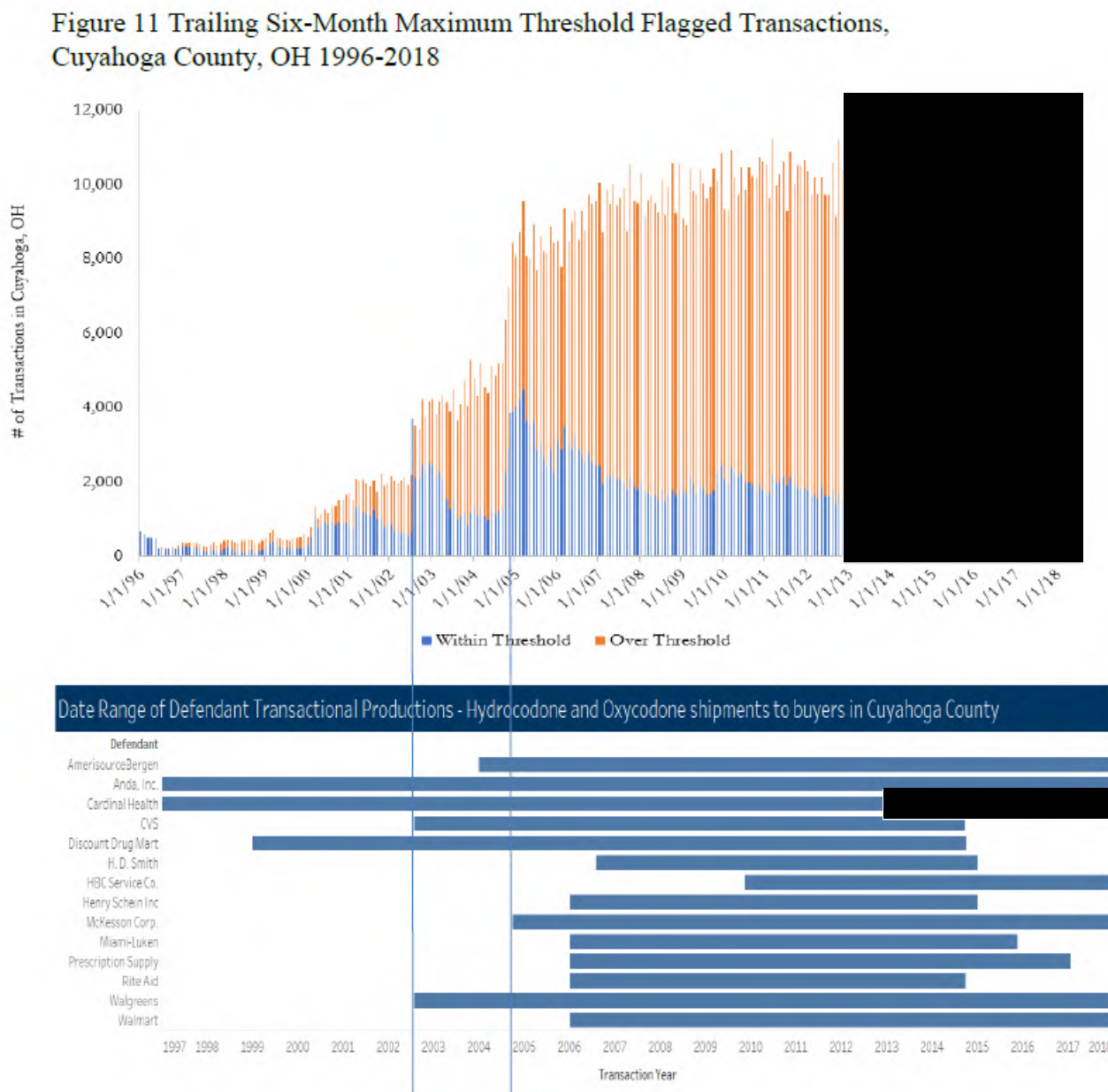
64. McCann's charts would look much different (and the volume increases less steep) had there been continuity among datasets, or if McCann presented this information correctly with the appropriate level of detail in the body of his report. To be clear, the time frame covered by the defendants' data production is not the same as the timeframe for defendants' actual distribution. Many defendants were distributing opioids in years for which McCann has no data<sup>25</sup>. To illustrate this problem, I have lined up a bar graph depicting the start date and end date of each defendant's production of hydrocodone and oxycodone data beneath McCann's Figure 11 in order to show the changes on his Figure 11 are a result of new data being added to the set, not the sole result of an actual increase in transactions. See Figure 20.

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<sup>25</sup> For example, see Deposition of Eric Cherveney on November 9, 2018, 36:18-37:19, 52:10-22 (AmerisourceBergen); Deposition of Steve Reardon on November 30, 2018, 238:19-239:12 (Cardinal); Deposition of Thomas Moffat on January 15, 2019, 18:4-9 (CVS); Deposition of George Euson on November 28, 2018, 22:19-23:18 (H.D. Smith); Deposition of Michael DiBello on February 19, 2019, 88:16-89:16 (HSI); Deposition of Ann Berkey on December 13, 2018, 64:4-23 (McKesson); Deposition of James Schoen on February 27, 2019, 52:14-54:5 (PSI); Deposition of Janet Getzey Hart on January 30, 2019, 74:19-76:23 (Rite Aid); 30(b)(6) Deposition of Susanne Hiland on January 22, 2019, 35:20-36:20 (Walmart).

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**Figure 20 – McCann’s Figure 11 of Aggregated Defendant Data joined with ARCOS, beneath which is a table showing the start and end dates of each defendants’ production of hydrocodone and oxycodone.**

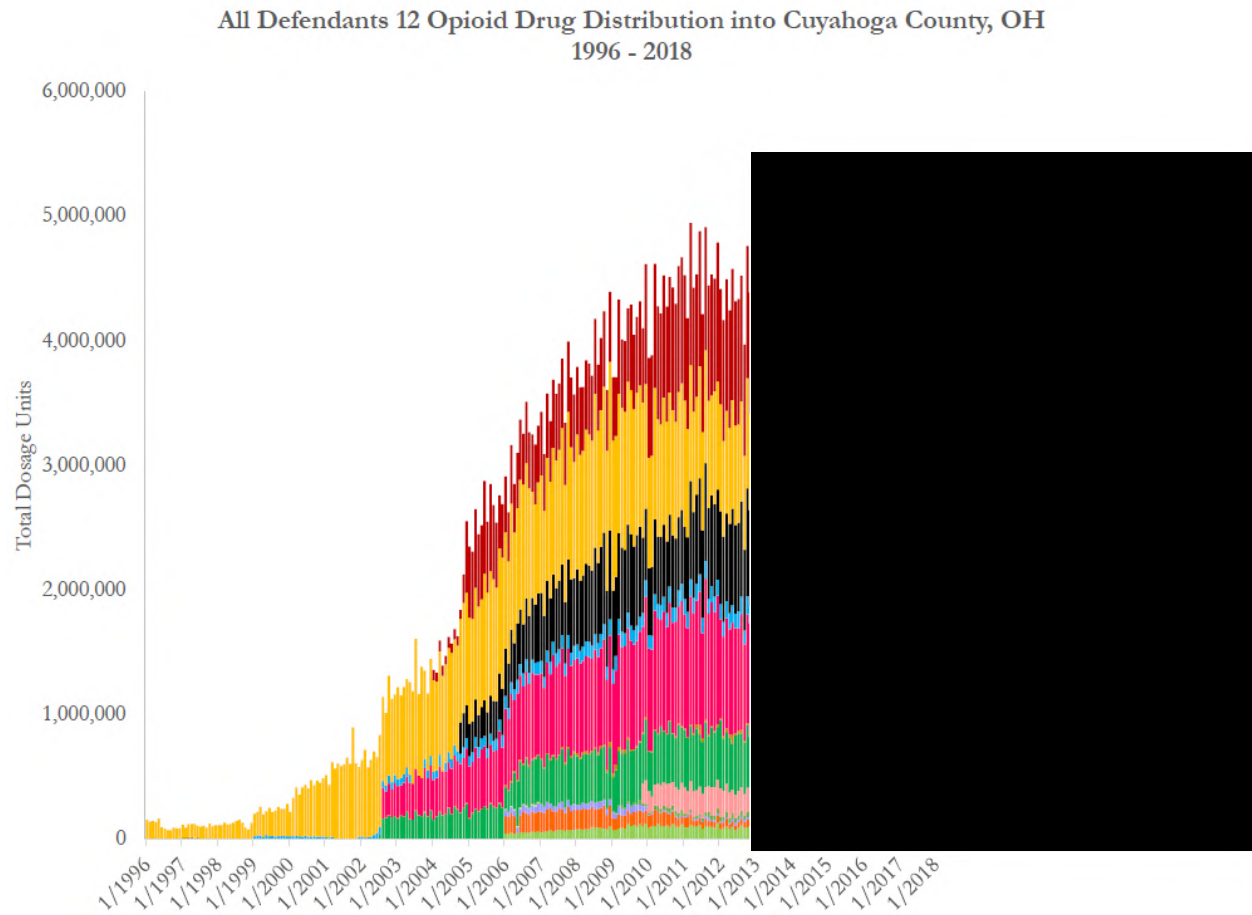


65. McCann presents the data showing that different defendants produced transactional data for different periods of time at page 9 of Appendix 9. But his presentation is misleading. He represents that the data shows “All Defendants 12 Opioid Drug Distribution[s]”

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from 1996-2018. He does not reference the fact that he does not have data for all defendants over this time period or that certain defendants' data pre/post ARCOS does not include all 12 drugs.

**Figure 21 – McCann's Aggregated Data for Cuyahoga County (Appendix 9 at 9)**



66. McCann fails to present any summary chart like the above showing that, in addition to providing data for different timeframes, different defendants also produced data for different drugs. Combining the defendants' transactional data with the ARCOS Data, and presenting the data in aggregate form, creates the false impression that a rapid increase in transaction volume occurred, when in reality the increase was much more gradual; the apparent



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rapid increase in volume was due to nothing more than the addition of additional data that was missing in earlier periods.

**E. Opinion No. 5 – McCann’s “Excessive Shipments” analysis is unsupported.**

67. It is my opinion that McCann’s excessive shipments analysis<sup>26</sup> is flawed for several reasons:

68. Based on my understanding of McCann’s professional background and experiences, he does not possess the expertise to make reasonable interpolations that establish the “medically necessary” baseline of per capita opioid MME, which he asserts in Section X of his report (pp 82-88).

69. In addition, McCann provides no regulatory, scientific, medical, or academic basis or justification for the “medically necessary” baseline of pharmaceutical opioids at any point in time.

70. Such opinions require supporting evidence regarding several factors, including but not limited to:

- New drug sales / adoption patterns
- Drug efficacy for various purposes
- Epidemiological studies
- Demographic analyses (surrounding areas, other comparable areas nationwide, national statistics, etc.)
- Retail trends for chain pharmacies, both locally and nationally

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<sup>26</sup> McCann Report at Section X at 82.

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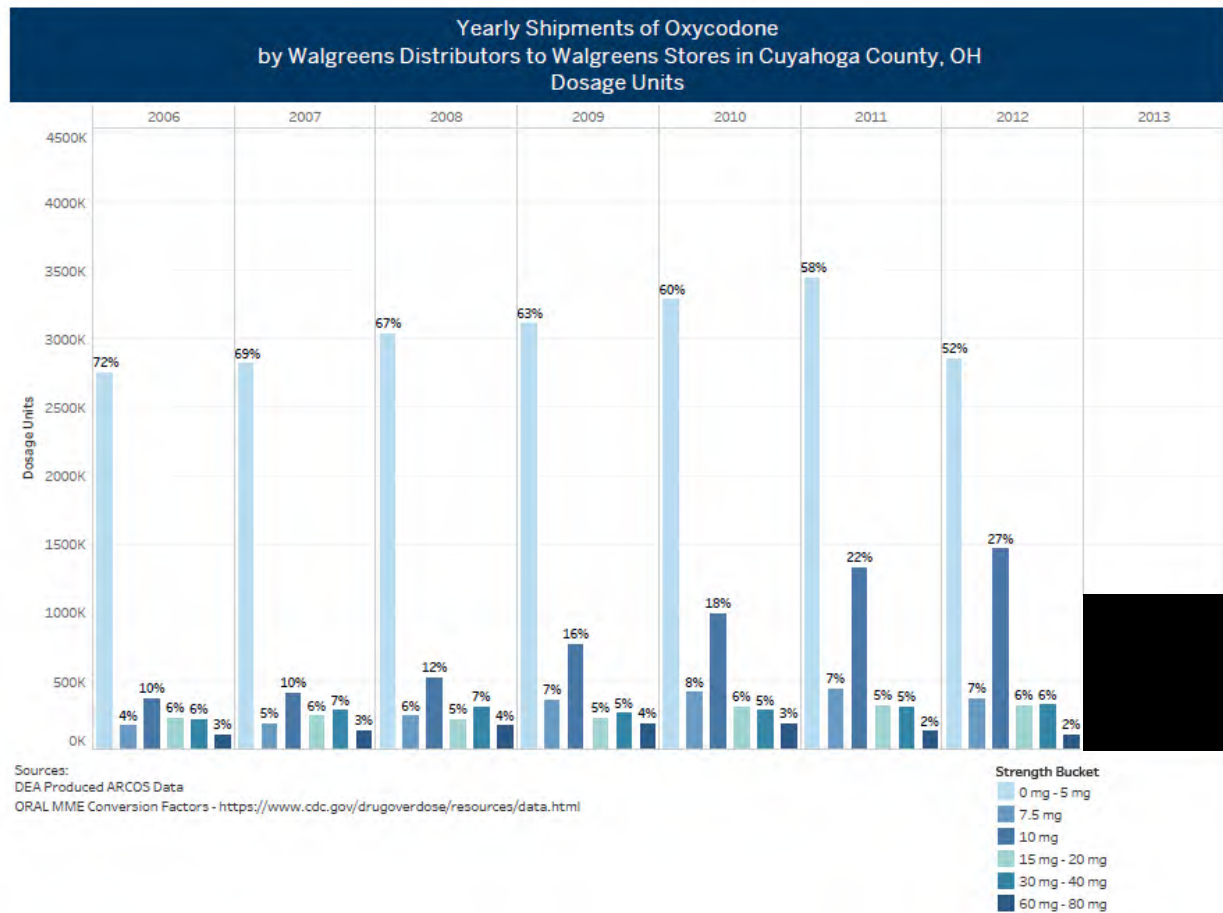
71. McCann has not presented any of these above sources of information or opinion which would be needed to form a reliable opinion on the “medically necessary” baseline for opioids shipments. Instead, McCann has merely drawn an interpolation between the level of opioid use in 1997 and the level of opioid use in 2018. Without any supporting data, he asserts that any shipments above this line are “excessive.”

72. No information is provided regarding Walgreens or any individual distributor’s alleged “medically necessary” baseline. There is therefore no basis provided for extrapolating from McCann’s overall numbers to any individual defendant.

**F. Opinion No. 6 - Comparative Analyses of Walgreens’ Distributor Shipments to Walgreens Pharmacies by Drug Strength**

73. At the request of counsel, I was asked to prepare charts summarizing the drug strength of hydrocodone and oxycodone shipped by Walgreens’ distributors to Walgreens pharmacies into Cuyahoga County and Summit County, Ohio, organized by their strengths (*i.e.*, 0-5mg; 7.5mg; 10mg; 15-20mg; 30-40mg; and 60-80mg) and measured in dosage units. Below is a sample chart of Oxycodone shipped by Walgreens’ distributors to Walgreens pharmacies into Cuyahoga County, organized by strength, from 2006 until 2013. See Figure 21. Refer to Appendix G for three additional charts.

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**Figure 22 - Annual shipments of Oxycodone by Walgreens Distributors to Walgreens Stores in Cuyahoga County, by drug strength**

### **G. Opinion No. 7 - Additional Tables and Charts Summarizing Walgreens' Data**

74. Presented below and at Appendix **H** are a series of additional tables and charts that summarize and illustrate Walgreens' transactional data where Walgreens was a distributor of hydrocodone or oxycodone to Walgreens pharmacies in Cuyahoga and Summit County, Ohio during the period August 1, 2002 through April 9, 2014. Because McCann limited his flagging analyses to hydrocodone and oxycodone, I have done the same with respect to my presentation of data. Again, Walgreens did not ship any of the relevant drugs into Cuyahoga or Summit County after April 9, 2014.



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- a) Two tables each of the 59 Walgreens pharmacies located in Cuyahoga and Summit County, OH showing the volume of hydrocodone and oxycodone shipped by Walgreens' distributors to Walgreens pharmacies for the period August 1, 2002 through April 9, 2014. See Table 1.

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Table 1 - Oxycodone shipments from Walgreens' Distributors to Walgreens stores in Cuyahoga County and Summit County, Ohio

Summary of Hydrocodone Transactions from Walgreens Distributors to Walgreens Stores in Cuyahoga County, Ohio		
Buyer DEA No	Store Number	Buyer County
BW4096322	3313	CUYAHOGA
BW4096358	3307	CUYAHOGA
BW4096360	3309	CUYAHOGA
BW4096360	12444	CUYAHOGA
BW4108797	3234	CUYAHOGA
BW4129842	3226	CUYAHOGA
BW4129854	3238	CUYAHOGA
BW4129866	3326	CUYAHOGA
BW4129878	3235	CUYAHOGA
BW4139564	3312	CUYAHOGA
BW4147307	3310	CUYAHOGA
BW4387759	3256	CUYAHOGA
BW4673554	3314	CUYAHOGA
BW5624184	3308	CUYAHOGA
BW5688176	4159	CUYAHOGA
BW5837945	4130	CUYAHOGA
BW5961063	4202	CUYAHOGA
BW5985998	4685	CUYAHOGA
BW6156396	4684	CUYAHOGA
BW6577312	5030	CUYAHOGA
BW6631560	5473	CUYAHOGA
BW6704185	5206	CUYAHOGA
BW7200633	5550	CUYAHOGA
BW7664130	6659	CUYAHOGA
BW8142159	6889	CUYAHOGA
BW8393441	5031	CUYAHOGA
BW8904206	7474	CUYAHOGA
BW8963224	2226	CUYAHOGA
BW9066982	1234	CUYAHOGA
BW9497327	2132	CUYAHOGA
BW9507786	10032	CUYAHOGA
BW9507798	10030	CUYAHOGA
BW9507837	10029	CUYAHOGA
BW9509588	10033	CUYAHOGA
BW9509588	10220	CUYAHOGA
BW9525176	10028	CUYAHOGA
BW9525188	10026	CUYAHOGA
BW9525188	10710	CUYAHOGA
BW9866863	9073	CUYAHOGA
FW0022614	10328	CUYAHOGA
FW0329931	9407	CUYAHOGA
FW1058557	11558	CUYAHOGA
FW1270785	12014	CUYAHOGA
FW1270800	12445	CUYAHOGA
FW2207125	12634	CUYAHOGA
Subtotal Cuyahoga County		

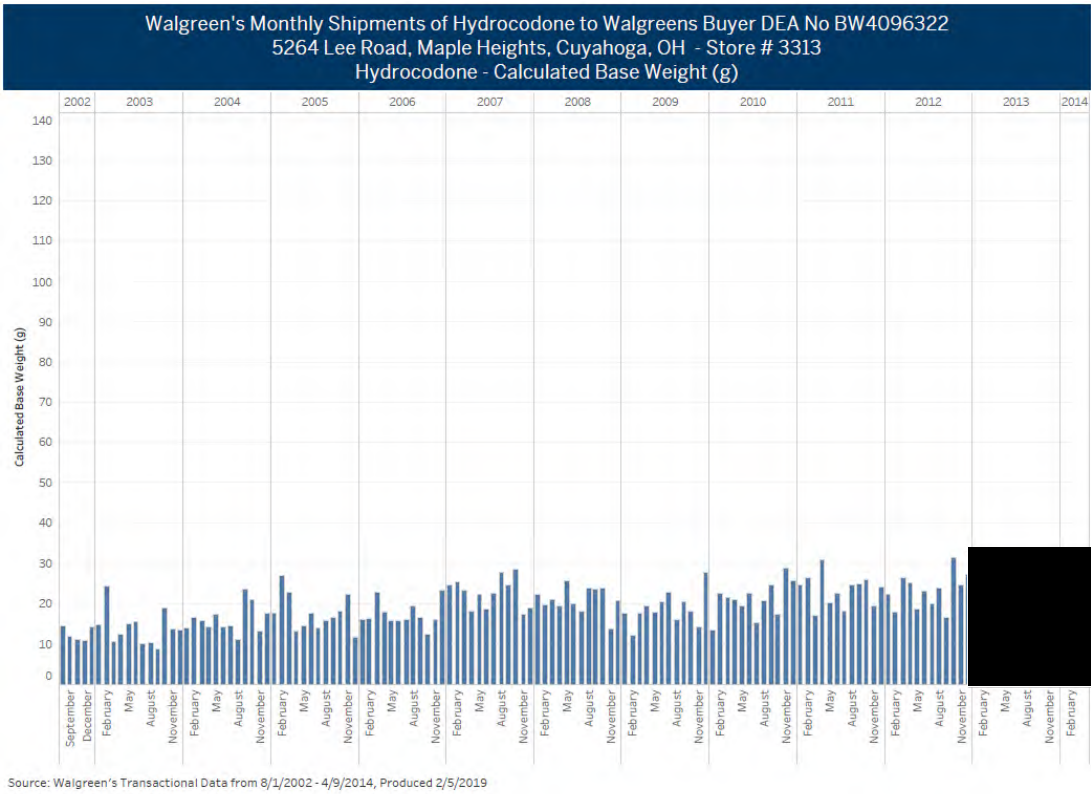
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Summary of Hydrocodone Transactions from Walgreens Distributors to Walgreens Stores in		
		Summi
BW4129880	3278	SUMMIT
BW4129892	3279	SUMMIT
BW4139540	3281	SUMMIT
BW4208965	3276	SUMMIT
BW4550287	3572	SUMMIT
BW5523469	3741	SUMMIT
BW5629615	4295	SUMMIT
BW6026668	4776	SUMMIT
BW6353572	4775	SUMMIT
BW6819924	5904	SUMMIT
BW8807402	7719	SUMMIT
FW0581480	11143	SUMMIT
FW1142962	11748	SUMMIT
FW1641489	12543	SUMMIT
Subtotal Summit County		
Total Cuyahoga and Summit Counties		

- b)** 472 store-specific charts showing the historical volume of shipments of hydrocodone and oxycodone from Walgreens' distributors from August 1, 2002 to April 9, 2014, measured in calculated base weight in grams, dosage units, MME, and number of transactions. See Figures 23 - 26.

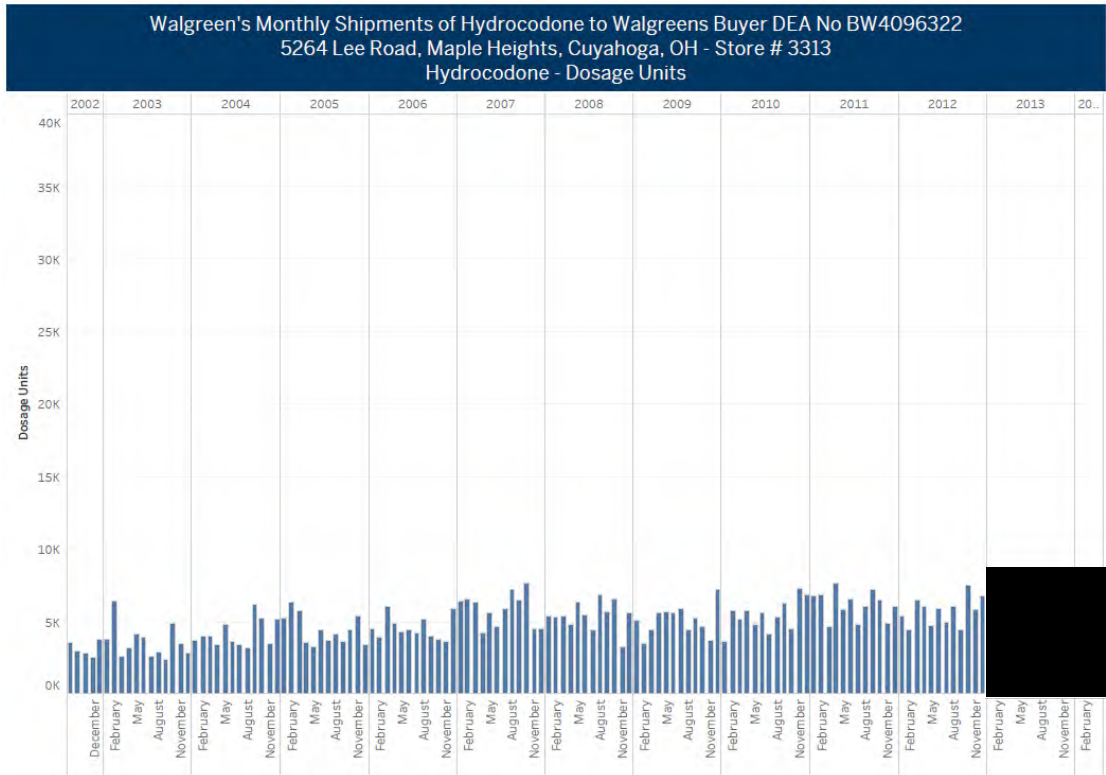
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**Figure 23 - Hydrocodone to Store #3313 in Cuyahoga (Calculated Base Weight in Grams)**



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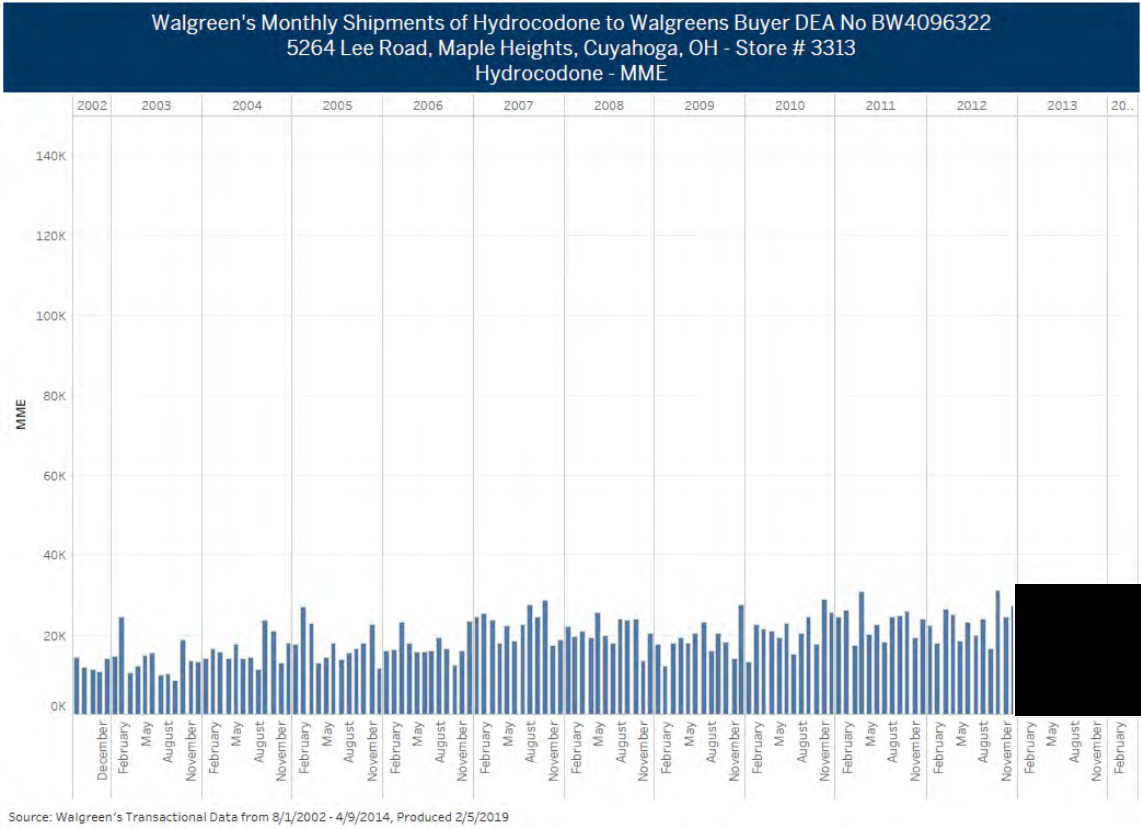
**Figure 24 - Hydrocodone to Store #3313 in Cuyahoga (Dosage Units)**



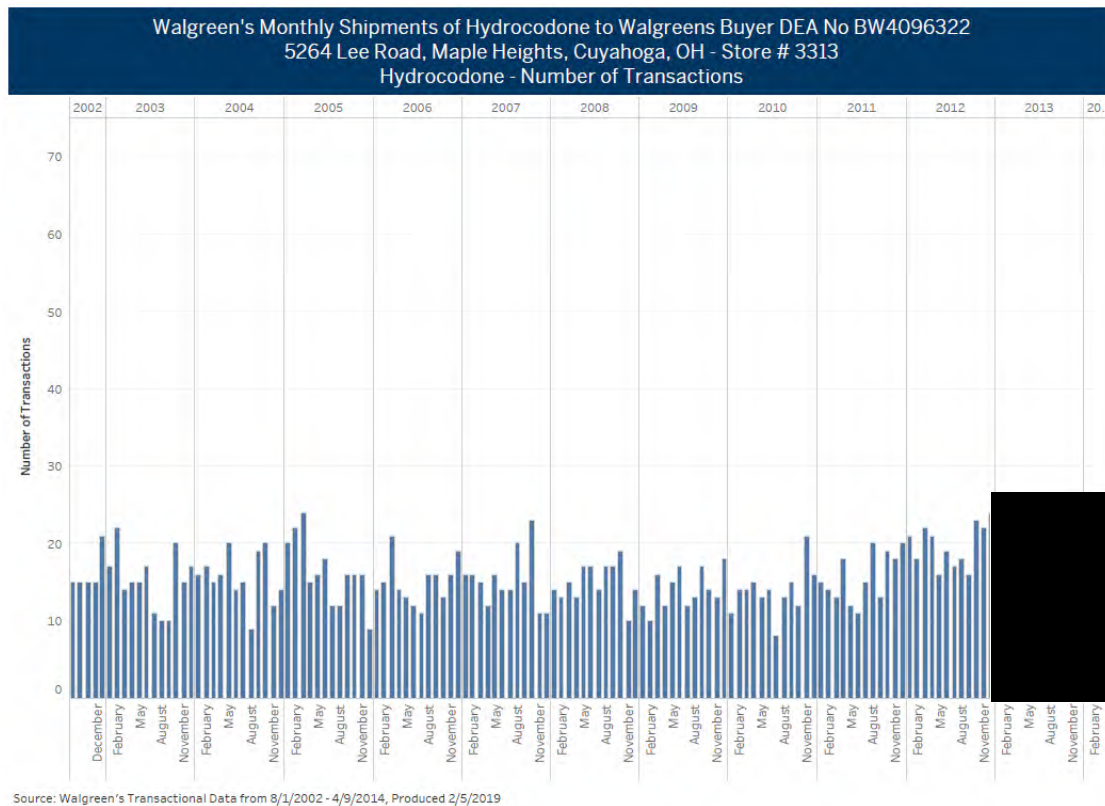
Source: Walgreen's Transactional Data from 8/1/2002 - 4/9/2014, Produced 2/5/2019

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**Figure 25 - Hydrocodone to Store #3313 in Cuyahoga (MME)**



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**Figure 26 - Hydrocodone to Store #3313 in Cuyahoga (No. of Transactions)**

- c) 2,240 store-specific charts highlighting the first transaction<sup>27</sup> identified by McCann under each of his five methodologies for hydrocodone and oxycodone, measured in calculated base weight in grams, dosage units, MME, and number of transactions. These charts highlight the **only** transactions that McCann actually identified under each of his five methodologies. On days where there was more than one transaction, McCann's computer code totaled the daily measures when comparing to his thresholds, therefore all transactions on that day represent the first identified transactions. See Figures 1-10 above.

<sup>27</sup> First transaction or all transactions on the date first identified by McCann as he does not specify which transaction he selected in his code.

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This set of charts is based on McCann's data, hence the incorrect number of total Walgreens pharmacies in Cuyahoga County and Summit County, Ohio (i.e., McCann's calculations are based on 56 stores whereas there were actually 59 stores over the 2002-2014 time period).

75. Chart with Walgreens store-specific open and close dates, and first and last transaction dates. See Table 2.



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**Table 2 – Walgreens Pharmacies in Cuyahoga and Summit County with Open and Close Dates, and Minimum and Maximum Transaction Dates**

Walgreens Store Location Information <sup>[1]</sup>						Transaction Dates from Walgreens Transactional Data <sup>[2]</sup>	
Buyer DEA Number	Store Number	Address	County	Open Date	Close Date	Min Txn Date <sup>[3]</sup>	Max Txn Date
BW4096322	3313	5264 LEE RD MAPLE HEIGHTS OH	CUYAHOGA	8/4/1994		8/5/2002	4/4/2014
BW4096358	3307	15609 LAKE SHORE BLV CLEVELAND OH	CUYAHOGA	8/11/1994		8/1/2002	4/4/2014
BW4096360	3309	3121 CLARK AVE CLEVELAND OH	CUYAHOGA	8/23/1994	1/28/2009	8/6/2002	1/23/2009
BW4096360	12444	3415 CLARK AVENUE CLEVELAND OH	CUYAHOGA	1/29/2009		2/4/2009	4/4/2014
BW4108797	3234	4281 W 130TH ST CLEVELAND OH	CUYAHOGA	9/8/1994		8/1/2002	4/4/2014
BW4129842	3226	6410 BROADWAY AVE CLEVELAND OH	CUYAHOGA	9/23/1994		8/2/2002	4/4/2014
BW4129854	3238	14525 EUCLID AV EAST CLEVELAND OH	CUYAHOGA	10/6/1994		8/5/2002	4/2/2014
BW4129866	3326	4365 MAYFIELD RD SOUTH EUCLID OH	CUYAHOGA	9/29/1994		8/2/2002	4/3/2014
BW4129878	3235	16400 CHAGRIN B SHAKER HEIGHTS OH	CUYAHOGA	10/7/1994		8/2/2002	4/3/2014
BW4139564	3312	22401 LAKE SHORE BLVD EUCLID OH	CUYAHOGA	9/15/1994		8/1/2002	4/4/2014
BW4147307	3310	16803 LORAIN AVE CLEVELAND OH	CUYAHOGA	9/29/1994		8/1/2002	4/4/2014
BW4387759	3256	11401 UNION AVE CLEVELAND OH	CUYAHOGA	5/19/1995		8/5/2002	4/2/2014
BW4673554	3314	5400 PEARL RD PARMA OH	CUYAHOGA	12/6/1995		8/1/2002	4/9/2014
BW5624184	3308	4265 STATE RD CLEVELAND OH	CUYAHOGA	11/21/1997		8/7/2002	4/2/2014
BW5688176	4159	6300 PEARL RD PARMA HEIGHTS OH	CUYAHOGA	1/30/1998		8/1/2002	4/4/2014
BW5837945	4130	3020 MAYFIELD CLEVELAND HEIGHTS OH	CUYAHOGA	6/5/1998		8/2/2002	4/3/2014
BW5961063	4202	127 E PLEASANT VAL SEVEN HILLS OH	CUYAHOGA	8/15/1998		8/1/2002	4/7/2014
BW5985998	4685	2135 WARRENSVILLE SOUTH EUCLID OH	CUYAHOGA	8/29/1998		8/1/2002	4/4/2014
BW6156396	4684	12777 ROCKSID GARFIELD HEIGHTS OH	CUYAHOGA	1/13/1999		8/1/2002	4/3/2014
BW6577312	5030	6605 MAYFIELD MAYFIELD HEIGHTS OH	CUYAHOGA	11/27/1999	7/30/2014	8/6/2002	4/4/2014
BW6631560	5473	25524 CENTER RIDGE RD WESTLAKE OH	CUYAHOGA	1/30/2000		8/6/2002	4/4/2014
BW6704185	5206	11701 DETROIT AVE LAKEWOOD OH	CUYAHOGA	4/21/2000		8/2/2002	4/4/2014
BW7200633	5550	21010 CENTER RIDGE ROCKY RIVER OH	CUYAHOGA	4/7/2001		8/6/2002	4/2/2014
BW7664130	6659	4071 LEE RD CLEVELAND OH	CUYAHOGA	3/11/2002		8/6/2002	4/4/2014
BW8142159	6889	6270 SOM CENTER RD SOLON OH	CUYAHOGA	1/31/2003		1/30/2003	4/3/2014
BW8393441	5031	7260 PEARL MIDDLEBURG HEIGHTS OH	CUYAHOGA	8/1/2003		7/28/2003	4/4/2014
BW8904206	7474	751 RICHMOND RICHMOND HEIGHTS OH	CUYAHOGA	8/6/2004		8/2/2004	4/4/2014
BW8963224	2226	5090 TURNEY R GARFIELD HEIGHTS OH	CUYAHOGA	8/30/2004		8/30/2004	4/3/2014
BW9066982	1234	6 E BAGLEY RD BERE A OH	CUYAHOGA	1/14/2005		1/18/2005	4/4/2014
BW9497327	2132	6900 ROCKSIDE RD INDEPENDENCE OH	CUYAHOGA	10/28/2005		10/25/2005	4/4/2014
BW9507786	10032	8966 BRECKSVILLE R BRECKSVILLE OH	CUYAHOGA	10/31/2005		11/10/2005	3/28/2014
BW9507798	10030	4507 CLARK AVE CLEVELAND OH	CUYAHOGA	10/29/2005	1/27/2009	11/1/2005	1/20/2009
BW9507837	10029	27251 WOLF RD BAY VILLAGE OH	CUYAHOGA	11/7/2005		11/8/2005	4/4/2014
BW9509588	10033	647 BROADWAY AVE BEDFORD OH	CUYAHOGA	10/29/2005	1/31/2007	11/3/2005	1/31/2007
BW9509588	10220	520 BROADWAY AVE BEDFORD OH	CUYAHOGA	2/1/2007		2/5/2007	4/4/2014
BW9525176	10028	20145 VAN AKEN SHAKER HEIGHTS OH	CUYAHOGA	11/7/2005	7/26/2006	11/22/2005	7/21/2006
BW9525188	10026	19001 EUCLID AVE EUCLID OH	CUYAHOGA	11/4/2005	12/31/2009	11/17/2005	12/31/2009
BW9525188	10710	20485 EUCLID AVE EUCLID OH	CUYAHOGA	1/1/2010		1/5/2010	4/4/2014
BW9866863	9073	20200 VAN AKEN SHAKER HEIGHTS OH	CUYAHOGA	7/27/2006		7/31/2006	4/3/2014
FW0022614	10328	7888 YORK RD PARMA OH	CUYAHOGA	10/27/2006		10/20/2006	4/2/2014
FW0329931	9407	14815 MADISON AVE LAKEWOOD OH	CUYAHOGA	7/6/2007		6/28/2007	4/4/2014
FW1058557	11558	5644 MAYFIELD RD LYN DHURST OH	CUYAHOGA	9/19/2008		9/15/2008	4/2/2014
FW1270785	12014	19980 W 130TH ST STRONGSVILLE OH	CUYAHOGA	3/11/2009		3/5/2009	4/3/2014
FW1270800	12445	24590 LORAIN RD NORTH OLMSTED OH	CUYAHOGA	3/19/2009		3/13/2009	4/2/2014
FW2207125	12634	1415 ROCKSIDE RD PARMA OH	CUYAHOGA	9/16/2010		9/9/2010	4/4/2014
BW4129880	3278	834 W MARKET ST AKRON OH	SUMMIT	9/8/1994		8/1/2002	4/2/2014
BW4129892	3279	1303 COPLEY RD AKRON OH	SUMMIT	9/16/1994		8/1/2002	4/2/2014
BW4139540	3281	1130 S ARLINGTON ST AKRON OH	SUMMIT	9/22/1994		8/2/2002	4/2/2014
BW4208965	3276	1925 W MARKET ST AKRON OH	SUMMIT	10/27/1994		8/2/2002	4/3/2014
BW4550287	3572	2645 STATE RD CUYAHOGA FALLS OH	SUMMIT	8/17/1995		8/2/2002	4/2/2014
BW5523469	3741	302 CANTON RD AKRON OH	SUMMIT	9/12/1997		8/1/2002	4/2/2014
BW5629615	4295	2086 GRAHAM RD STOW OH	SUMMIT	11/29/1997		8/5/2002	4/2/2014
BW6026668	4776	900 WOOSTER RD N BARBERTON OH	SUMMIT	9/26/1998		8/1/2002	4/3/2014
BW6353572	4775	9043 DARROW RD TWINSBURG OH	SUMMIT	7/10/1999		8/1/2002	4/2/2014
BW6819924	5904	830 BRITAIN RD AKRON OH	SUMMIT	7/21/2000		8/5/2002	4/3/2014
BW8807402	7719	663 E AURORA RD MACEDONIA OH	SUMMIT	6/11/2004		6/9/2004	4/4/2014
FW0581480	11143	3009 W MARKET ST FAIRLAWN OH	SUMMIT	11/15/2007		11/12/2007	4/3/2014
FW1142962	11748	361 E WATERLOO RD AKRON OH	SUMMIT	11/13/2008		11/11/2008	4/2/2014
FW1641489	12543	755 HOWE AVE CUYAHOGA FALLS OH	SUMMIT	9/25/2009		9/22/2009	4/2/2014

[1] Walgreens Pharmacy Information provided by John Merritello, Manager at RxInventory Control at Walgreens.

[2] Source of Transaction Dates: Walgreens Transactional Data from 8/1/2002 - 4/9/2014 Produced 2/5/2019 (WAGMDL00773926).

[3] Minimum Transaction Dates may precede the store open date by no more than 8 days. Pharmacies stock their shelves before opening.

**Table 3 – Percentage of Sales of Hydrocodone to Walgreens Pharmacies in Cuyahoga and Summit County, by Year**

Source: DEA-Produced ARCOS Dataset from 1/1/2006 - 12/31/2014  
Walgreens refers to distributions from Walgreens.  
Other refers to distributions from Non-Walgreens entities (e.g., Cardinal Health, ANDA, etc.).  
Percentages based on Dosage Units.

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**Table 4 – Percentage of Sales of Oxycodone to Walgreens Pharmacies in Cuyahoga and Summit County, by Year****Percentage of Total Sales of Oxycodone, by Distributor Category  
to Walgreens Pharmacies in Cuyahoga County and Summit County, Ohio**

Year	Cuyahoga County			Summit County		
	Walgreens	Other	Total	Walgreens	Other	Total
2006	95.8%	4.2%	<b>100.0%</b>	94.2%	5.8%	<b>100.0%</b>
2007	95.7%	4.3%	<b>100.0%</b>	94.6%	5.4%	<b>100.0%</b>
2008	96.1%	3.9%	<b>100.0%</b>	95.9%	4.1%	<b>100.0%</b>
2009	97.3%	2.7%	<b>100.0%</b>	96.5%	3.5%	<b>100.0%</b>
2010	97.6%	2.4%	<b>100.0%</b>	97.3%	2.7%	<b>100.0%</b>
2011	98.5%	1.5%	<b>100.0%</b>	98.1%	1.9%	<b>100.0%</b>
2012	98.6%	1.4%	<b>100.0%</b>	98.4%	1.6%	<b>100.0%</b>

Source: DEA-Produced ARCOS Dataset from 1/1/2006 - 12/31/2014

Walgreens refers to distributions from Walgreens.

Other refers to distributions from Non-Walgreens entities (e.g., Cardinal Health, ANDA, etc.).

Percentages based on Dosage Units.

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I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct and this declaration was executed on this 10th day of May 2019, in Chicago, IL.



Robert L. Brunner